



Computer Weekly

PT7 cuts costs

FERRANTI Computer Systems

Thursday, September 29, 1983

Acorn and Logica to go public

by John Kavanagh
FAST growth by microcomputer manufacturer Acorn Computer and consultancy Logica is taking these UK firms into Stock Exchange listings to raise cash.
RHC computer sales have pushed Acorn's profits from £306,000 to £8.3 million this year, while turnover reached £42 million. Production of the £199 Electron home computer is to be doubled. Some 100,000 machines will be made by AB Electronics - and that will create 100 jobs at the company's factory in Wales.
Acorn hopes to raise £10 million by offering 10% of its equity on the Unlisted Securities Market, a cheaper and less demanding way of getting into the Stock Exchange than going for a full listing.
Co-founders Chris Curry and Hermann Hauser say they must continue to come up with new ideas to keep their market position. Plans include a link to enable the computer to control household lighting, plus an adapter to allow an Electron to connect through a telephone to the telex network.
Meanwhile Logica managing director Len Taylor revealed the company's plans for a full Stock Exchange listing when he announced last week a 27% growth to £42.2 million for the year ending June 30. Pre-tax profit was up 55% at £3.35 million.
Logica is putting about 30% of its shares on the market in two months' time. A third will be new shares to bring money into the company. The 220 staff shareholders will see their ownership of the company drop from 55% to below 50%.
The other shareholders are investment institutions such as pension funds.
"We've grown very rapidly in the last two years and need cash for working capital, expansion and capital investment," Taylor said. "We need a big investment in computer equipment to back our work on products and systems."
Taylor said Logica had some takeover opportunities, especially in the US. The company took over US banking systems specialist Freyburg Systems Associates two years ago, a move which tripled Logica's size in the US and pushed it into the banking market in a big way. The US now accounts for 14% of its business - and banking represents 22%.
But Taylor added: "Acquisitions are not top priority. Our growth so far has been of our own making rather than through takeovers."
All the same, he said the Stock Exchange listing would be useful because the shares could be used to pay for acquisitions.
The listing would also give Logica more status in the computing market, he said.
During the last year Logica has set up a subsidiary in Darmstadt, West Germany, home of the European Space Agency, one of the company's customers. And it is soon to open a Far East operation in Hong Kong with Jardine Matheson, the colony's biggest public company. Meanwhile Logica has become the third biggest computing services company in Australia after buying the subsidiary of Planning Research Corporation there. Overseas business accounts for 48% of turnover.
Taylor said there were no plans to move further into manufacturing. Sales of the 2200 word processor through ICL were going extremely well, he said.
Logica's share placing is being handled by merchant bank Close Brothers and underwriter House of Lords. The shares will be offered for sale by tender, which means a minimum price will be set and buyers can bid at that or a higher price.



TAYLOR... "We've grown rapidly in the last two years."

ICL in head-on clash with its Cadcentre

ICL is going into direct competition with its Cadcentre subsidiary in a move which also pits its Perq personal computer head-on against the Apollo Domain.
In the last week ICL has unveiled the Perq 2 replacement to the original Perq and signed a £1 million three-year agreement to sell Cadcentre's 3D modelling package and GNC numerical control programming system on the new machine.
But next week Cadcentre will announce its first move into hardware sales with a package including the Apollo Domain running DAD and GNC. The Apollo machine will also be used to spearhead Cadcentre's attack on the US. And Apollo itself will unveil some "very significant additions" to its range next week.
Cadcentre is partly owned by ICL, which this year led a three-firm consortium in a £1 million takeover.
The new Perq has up to two megabytes of main memory, compared with one megabyte on the Perq 1, while control program memory, which can be written to by users, is quadrupled to 16K. Other enhancements include a 35 megabyte eight-inch Winchester disc. Prices start at just under £20,000, the same as Perq 1.
The lunch sees ICL becoming one of the first of the 20 companies supporting the international local area network standard to introduce a product following the standard. In June last year the firms, including big names like Digital Equipment and Hewlett-Packard, committed themselves to support the European Computer Architecture Association standard.
The Perq 2 announcement confirms PNX, ICL's time-sharing standard Unix open system, as the Perq's main system. Initially PNX supports local area networks over a network of systems local area networking under the ECMA standard. Later releases will support resources such as disc and printers.
The network runs at the bits a second. Perq 2s were linked only by Ethernet networks.
Apollo said the move could bring Perq monomania to an end. "We have a record with PNX as far as the networking standard," said Apollo UK manager, John Parkinson, referring to the delays suffered in bringing PNX to market.
Parkinson added: "We have always been the whole of the Domain. You can't multi-user DEC Vax or its mini-computers with any workstations. We compare our workstations with shared the network."
ICL has sold about 500 Perq 1s but that includes 100 in three Rivers, the US firm developed the machine and Perq 2, has sold about 100.
Both sides say the move will take off in the next two years.



OAKLEY... "Institutions want a good place to put their money."

Oakley backs bank backing scheme

A SCHEDULE for merchant banks to back small companies who want to take part in the Alvey Programme is being pushed by Brian Oakley, the programme's chairman.
Oakley, who spoke at the Computing Services Association quarterly luncheon last week, once more addressed the problem that the government's 50% limit on Alvey funding could pose for the small company.
He said that City institutions were looking for a good place to put their money. The Alvey directorate hopes to establish a scheme for firms unable to raise the 50% necessary to participate in Alvey projects, and which the Alvey Directorate believe ought to be in the programme. In such a case some kind of outside City backing would be arranged.
Oakley was cautious not to make any firm commitment to the scheme: "I believe we will be able to work it out, but I am not sure - I hope to announce something soon."
The 50% funding limit is a real problem, Oakley said, since some of the very best of British talent is in small firms.
But he also sees some positive advantage to the limit: "I have seen some firms grow up on 100% funding," he said, particularly in defence.
But he stressed that if he has a "water tight case" that the limit is impeding the programme, he has the option to go back to the Cabinet and ask for a change in policy.
The problem of the 50% limit on funding was brought home by Jim Feeney, managing director of Imperial Software Ltd.
Feeney asked why small UK software companies should get involved in the Alvey Programme, when they were able to get 100% funding from other sources.
Feeney said Imperial Software, which was only founded a year ago, was being backed with 100% funding on projects backed by US government departments and by the European Commission.
Oakley said the UK software industry must achieve a recognition similar to that of Rolls Royce - a worldwide recognition for its excellence and productivity.
The Alvey Programme gives the industry some chance to achieve that goal.
But he added that a considerable amount of software in this country could be better written.

Europe plans harmonious telecomms

by John Riley and Donald Kennett
A MAJOR new European initiative to achieve a common telecommunications policy got off the ground last week when the Council of Ministers agreed to a six-point plan drawn up by the European Commission.
The plan, to combat the growing divergence and uncertainty of telecommunications development in the Community and the fragmentation of its markets, proposes:
■ co-ordinated medium and long term planning;
■ common R & D programmes, especially in user interfaces, optoelectronics and local broadband networks;
■ agreement on interface standards;
■ joint development of transnational communications links;
■ development of the telecommunications infrastructures of poorer EEC countries; and
■ opening up of those parts of the communications equipment market dominated by public procurement to combat entrenched national interests.
The European telecommunications industry, which is still mainly oriented towards telephone communication, is increasingly moving towards digitisation to carry data communications.
The need for co-operation has been pressing for some time. "The lack of market transparency at Community level threatens the competitiveness of the European telecommunications industry, which is confronted with mounting pressure from the US and Japan," says the Commission.
Now that the Council of Ministers has given its approval, a more detailed programme will be drawn up by the Commission, and financing arrangements for the whole package will be discussed at the Heads of State meeting in Athens in December.
Advanced telecommunications facilities are seen as essential to exploiting the devices and services to be developed under the European Spirit R & D programme and under national schemes such as the Alvey programme.
Implementation of harmonised telecommunications facilities is expected to increase the multiplier effect on their benefits for industrial and commercial efficiency, and to enlarge the overall market.
Special advisor on telecommunications to the European Commission and former British Telecom managing director Peter Benton said: "Information technology can't use up scarce resources and the growth it generates is unlikely to be affected by the constraints experienced in the manufacturing revolution."
The Commission is aware that, on the record of efforts with X25 packet switching, which is believed to have been implemented in 25 different versions, and of the two year wait for telex, it will take a major political effort to achieve harmony and rapid progress in the more complex area of the ISDN (Integrated Services Digital Network).
The Commission, in its report to the Council, hit out at the insufficient investment caused by the fragmentation of the telecommunications market, the development and use of nine different public switching systems (compared with three in Japan and four in the US); divergence of narrow and wide band integrated services; and a situation where European companies are co-operating more with the US and Japan than with each other.
Telecommunications authorities are believed to be poorly motivated to get advanced networks operating quickly. They use "cost-plus" pricing policies that hide the market value of their services from them, operate on a public service philosophy rather than as leading edge industries, and are run as bureaucracies.



BENTON... "IT doesn't use scarce resources."

BT goes US for directory enquiries

BRITISH TELECOM has gone to the US for its long-awaited computerised directory enquiry system. Standard Telephone & Cable, of London will supply the system developed by Computer Consoles of New York in a joint contract worth \$4 million.

The system will comprise 4,000 workstations with access to a total UK database of 22 million directory entries, making it the largest computer-based listing of telephone numbers in the world. Originally ICL had been tipped to win the contract with its Content Addressable File Store (CAFS).

Grundy bidders

TWO firms in continental Europe are leading the bidders for UK microcomputer manufacturer Grundy Business Systems. Liquidator Tim Harris of Deloitte Haskins & Sells, has sent draft takeover contracts to the companies and hopes for a reply this week.

HP ups its stake

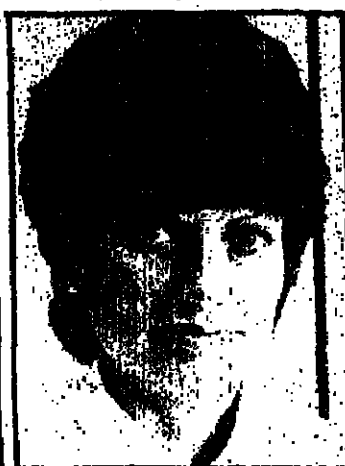
HEWLETT-PACKARD is to increase its stake in Yokogawa-Hewlett-Packard, its joint venture with the Japanese instrumentation manufacturer, Yokogawa-Hokushin Electric, from 49% to 75%, through a new share issue. YHP, based in Japan, employs 2,000 and had sales of ¥250 million in 1982 manufacturing instruments, computers and peripherals as a licensee of IIP.

Motorola spends

MOTOROLA is to spend at least £30 million over the next three to five years to market its data processing and office automation products directly in Europe. The company's Information Systems Group expects to take on 174 staff in Europe this year.

DataLogic to take on 225 staff

by Caroline Burgess
UK-BASED systems house, DataLogic, is to hire 225 extra staff, most of them programmers and analysts.
The bulk, 140, of the staff will be hired as soon as possible, and the other 85 vacancies will occur by the end of next year.
A DataLogic spokesman said the jobs were the result of increased sales in all areas. "We have suffered from decreased orders but now they are increasing. There has been a definite upturn in business."
Most of the vacancies are for computer programmers and analysts but also include engineers and sales staff. These are in addition to the company's regular intake of 15 graduates a year. At present DataLogic employs about 700 staff.
DataLogic last April bought Altergo Business Systems from the recoveryist and took on 135 staff.
Other software houses which have recently recruited staff include Logica which in August hired 125 graduates. It expects to take on a total of 250 new staff annually. Scicon expects its recruitment to continue at between 120 and 140 a year.



NEWELL... Drive to recruit small services firms.

CSA first lady

by John Kavanagh
F INTERNATIONAL managing director Alison Newell is set to become the Computing Services Association's first woman president today (Thursday). She has been vice-president to Peter Thomas of Pactal for the last year and the annual meeting is expected to vote her into the top CSA post.
Newell said that if elected she would press on hard with the campaign to recruit small services firms as "associate members," a scheme introduced this year. "This was for those companies' own benefit; they would not have to meet the 'very stringent' entry conditions but they could take advantage of CSA information services, meetings and seminars. Once they had proved they could survive they could apply for full membership," she said.
Newell said the CSA should also continue to stress its own role as the trade association of a maturing industry. It would push for more recognition of itself and its members in the business world.
She added that there was a good feeling of optimism among services firms.
■ Services industry booming; page 5.

Profit slump hits Apple share price

by John Riley
APPLE Computer shares took a sharp tumble on the New York stock exchange last Friday following the news that the fourth quarter figures (out tomorrow) will show a slump in profits.
The share dropped from \$33 to \$23.75 before recovering by Monday to \$25.35, compared with a peak of \$62.25 just three months ago.
The wave of selling was sparked off by information from John Sculley, Apple president, that profits for the third quarter would be at least \$10 million below the \$18 million gained in the respective quarter last year.
The announcement was made in advance of the results, "because we considered it good industrial relations to give people an advance warning. What analysts don't like is a surprise," said a company spokesman in Apple's California headquarters.
The fall in profits is widely attributed to competition from IBM's Personal Computer. The spokesman said that European figures as a whole were slightly below target.
Peter Cobb, managing director of Apple in the UK, did not think the IBM PC such a serious threat.

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KAPLAN (seated)... Creator of 1-2-3 and VisiCorp.

Lotus program is an instant hit

by Nuala Moran
LOTUS 1-2-3, an IBM PC program which has sold 60,000 copies in the US since its launch six months ago, is now available in the UK. And between 500-1,000 copies have been sold in the two weeks it has been available.

Written by Mitchell Kaplan, the creator of VisiCorp and VisiCorp, 1-2-3 combines spreadsheet analysis, graphics and information management. It is the only product of the Lotus Development Corporation, a software company set up by Kaplan about a year ago.

According to Chris Morgan, Lotus' vice-president of communications, 1-2-3 is designed to be used by both "newcomers who have never had exposure to hardware or software and by power users adept at using software."

The UK franchise for 1-2-3 has gone to Rellex, which is also a new company. It was set up six months ago by John Weatherhead, formerly with the distribution company Rapid Recall. Weatherhead is confident that 1-2-3 will get a large slice of the IBM PC market here.

"There are between 20,000 and 30,000 IBM PCs in the UK and we expect at least 70% of this market to go for Lotus. We could go as high as 80-85%," he said. Lotus has also established a UK subsidiary. At the moment it is sharing facilities with Rellex in Reading. The two companies are currently sharing responsibility for supporting 1-2-3 but finer lines of responsibility will be drawn once a full management team is established at Lotus UK.

Over half the IBM dealers in the UK were trained for 1-2-3 before the official launch. Dealer kits are available which include a preview version of 1-2-3 on disc, a tutorial disc, a demonstration disc and a keyboard template.

Plans are in hand to adapt 1-2-3 for Texas Instruments' personal computer, the TPC: Rainbow, ATC's Vector and the Wang personal computer.

Morgan said that Lotus would also consider adapting 1-2-3 to machines that are popular in Europe but not in US. The company estimates that around 40-50% of its market will be in Europe.

European language versions are planned and Lotus has had talks on setting up in France and Germany.

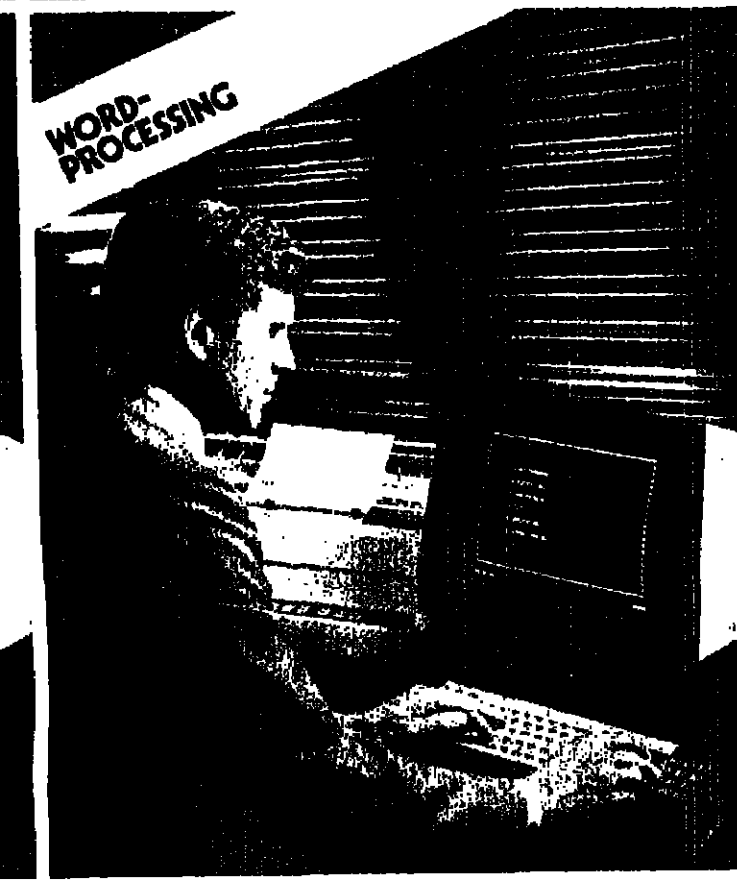
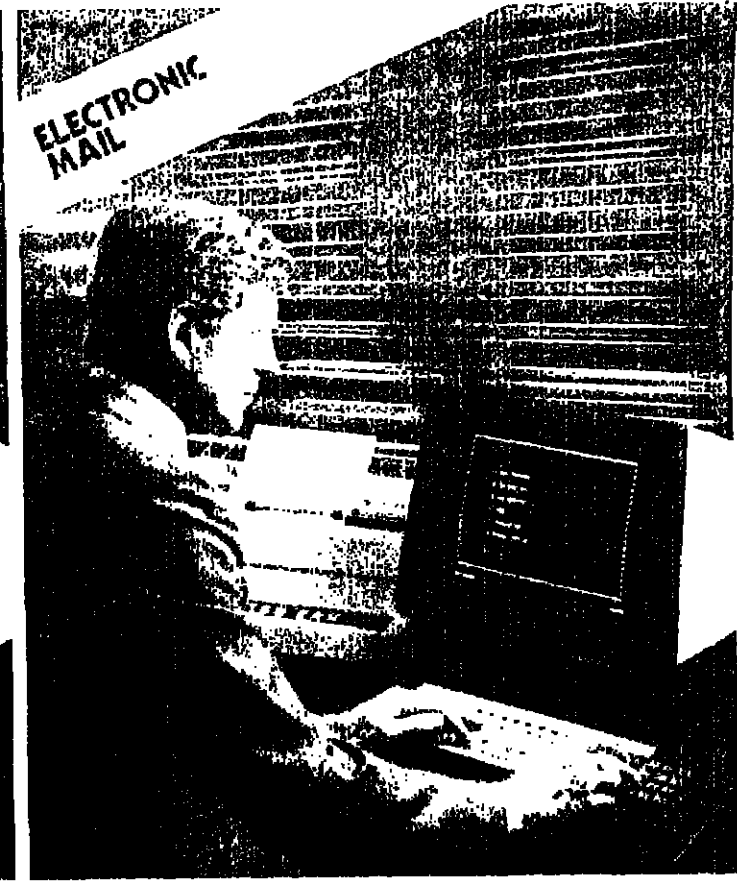
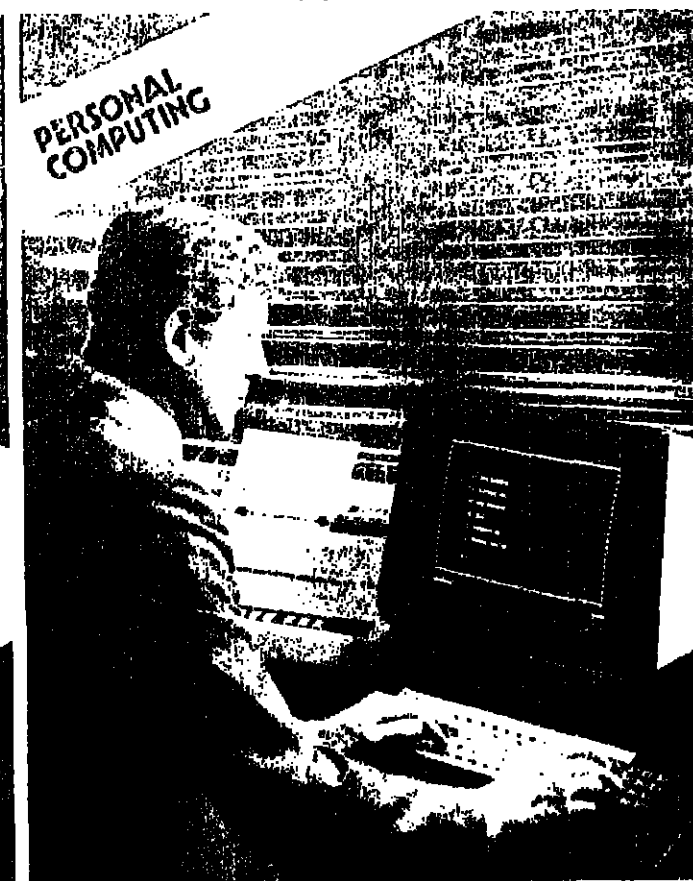
Sord plans to train world's industrialists

by Tom MacSweeney
SORD is planning to develop hardware and software for industrial training which will be marketed worldwide, according to the company's founder and president, Takayoshi Shima.

He said at the opening ceremony of its U2m factory at Cookstown, County Down that it was in negotiation with the Irish State for authority, AnCo, about the project.

"With AnCo's skills in the area and the experience it has, we can work out the technological and programming skills we could do such a system," he said.

Since 1980, when it came to land, the country has been in European manufacturing, marketing, R&D and training in quarters.



EEC won't enforce compatibility

WHILE supporting the idea of compatibility in computer equipment, the EEC Commission is not prepared to go to the lengths of introducing rules requiring manufacturers to give advance information on interfaces.

This was made clear at the September session of the European Parliament in Strasbourg when the Commission gave a written reply to a question from Dublin Euro-MP, Richie Ryan.

He argued that public interest required "the widest possibility of connecting into computer systems, processors and other plug compatible elements."

And he asked: "Will the Com-

mission clearly define and effectively ensure timely provision of adequate interface information by computer manufacturers to their competitors?"

In its written reply, the Commission accepted that this was an important matter for both manufacturers and users; for that reason the Commission had evolved an active policy aimed at encouraging standards within the Community.

But the Commission would not take general measures relating to interface information so that each manufacturer would have to provide to competitors the information they needed to produce compatible equipment.

Harris adds supermini

by Keith Holder
HARRIS Systems has unveiled the latest addition to its supermini range which, it claims, will outperform Digital Equipment's VAX 11/780, IBM's 4381 and Prime Computer's 9950.

The Harris 1000 operates at four Mips and is designed for scientific and commercial applications requiring high performance including data acquisition, university research, product design and CAE.

"The system offers many price performance advantages," said UK general manager Frank Walters. "By comparison, its performance is up to three times higher than a VAX 11/780 and twice that of a Data General MV1000 at comparable prices."

Entry level cost for the system is £210,000 and orders will be

accepted now for delivery next spring.

The computer owes its speed to a new 100K family of emitter-coupled logic integrated circuits which allow higher switching speeds. Norman Swales, Harris director of hardware development

said: "Many competitors quote very high Mips numbers, but reach them with multiple processors. Our design, using ECL speeds, only needs one."

Not everyone is convinced, and Malcolm Hoar, marketing manager for Prime Computer said: "Mips is a very limited measure, it is not how high you can get but what you do that really counts."

Hardware features for the computer include 48 Mbytes of virtual memory and optional 32, 48, 64 or 96-bit architecture.

Richard Drake reports on the BCS object-oriented software conference

How Lisa taught Apple a lesson

LARRY Tesler, the inspiration behind Lisa's revolutionary user interface, spoke in London last week about the lessons Apple had learnt from the massive development effort that created the Lisa.

He was speaking in London at a packed British Computer Society conference on object-oriented software.

"I suppose we proved you could create the most up-to-date object-oriented interface using a non-object oriented language," he told delegates, but admitted that there had been drawbacks.

Different teams approached the same user-interface issue in subtly different ways and the eventual much-praised consistency was difficult to achieve.

From now on, he said, those problems would not arise, thanks to Apple's new object-oriented development language, Clascal.

The addition of classes to Pascal allows software houses to write applications that reside in windows on the screen exactly like Apple's own software.

And Tesler claims that, contrary to expectations, programs written in this way actually run faster than by conventional methods.

Four object-oriented products were displayed at the conference, including VisiCorp's VisiOn and the seminal Smalltalk-80 system from Xerox.

All the speakers acknowledged the contribution of Smalltalk as the fullest expression so far of the object-message metaphor applied to software systems.

Smalltalk was developed by a team of researchers at Xerox Parc, Palo Alto, during the last 10 years.

One of the leaders of the group, Dr Adele Goldberg, said that although its research goals were not fully achieved, it had decided to release Smalltalk-80 to allow

hardware designers to get an object-oriented concept.

Smalltalk's remarkable performance and its use of a mouse as a device allow for very fast development and debugging.

All parts of the system, including the process you are in, are objects that can be manipulated any time.

Tesler, who originally worked with Dr Goldberg at Xerox, said that to compare programs with ordinary languages was "trying to compare apples with flying."

Doubts remain, however, as to Smalltalk's performance as a present microcomputer language.

Dr Brad Cox of Product Products Inc, described an Objective-C, a language that compiles Smalltalk-like programs into C language source code.

This hybrid approach is said to be the one used by Apple in Clascal.

According to Dr Cox, it combines the flexibility of object-oriented programming with the efficiency of a compiled language and, as a bonus, Objective-C can be used in a number of common environments, including Unix.

All the speakers were agreed on one thing, that the time was ripe for the introduction of the object-oriented approach.

The mere 40,000 lines of code in Clascal showed the power of the object-oriented approach, Dr Cox said.

Whether other hardware manufacturers will follow Apple's lead in producing a machine tailored to this type of software remains to be seen.

But many observers felt that the presence of 15 delegates each from IBM and ICL at this conference may just be extremely significant.

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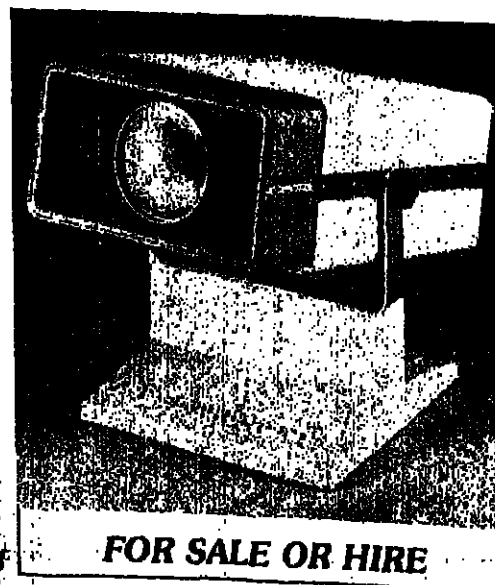
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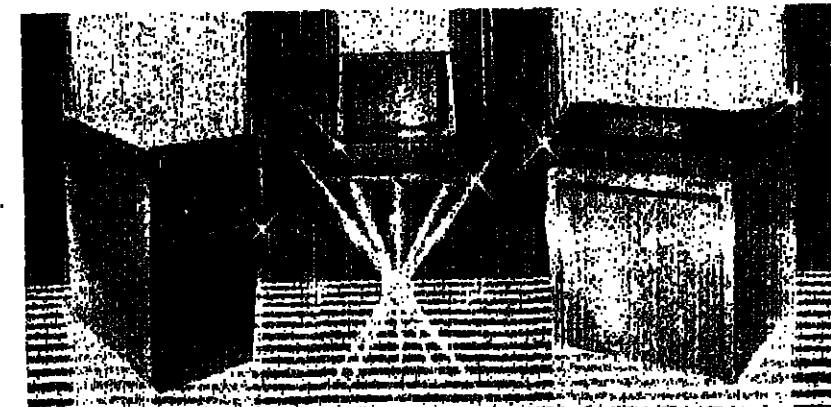
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US Navy boosts Planet local net

by Caroline Burgess

A US naval supply centre has ordered the UK-designed and manufactured local area network Planet from Racal-Milgo in a deal worth \$4.2 million.

"It is our biggest individual order to date and we are delighted," said Tim Holley, Racal-Milgo managing director. "It is significant - to supply the US navy with a UK product."

Earlier this month Racal-Milgo marked the first anniversary of the launch of Planet with the announcement of major new enhancements to the system. Orders valued at about \$4 million were placed in the first year - before the US order.

The enhancements include a

compact card nest allowing terminal access point for up to 64 individual ports, easy access to Planet for PABX users, two protocol converters and a single-port TAP operating at data rates up to 64Kbits per second.

"The market for local area networks is poised to take off worldwide into a multi-million pound business," said Holley. "Today every child is being taught how to use a computer. And when they get into the world of work they will expect to have some form of keyboard device."

It is being predicted in the US that by the early 1990s there will be one workstation per office worker. Racal-Milgo sees the local area network as the fastest growing

market, claiming that it is set to grow by a factor of more than 100 by 1987.

Planet's flexibility and self-healing capabilities are seen by Racal-Milgo as its prime selling points.

The ability of Planet to withstand a failure of any of its components or a break in the cable is leading to developments for use in the defence field. "One of the lessons learned from the Falklands campaign was the need to maintain communications on board a vessel damaged in battle," said Holley.

"The self-healing capabilities of Planet will allow vital communications links to continue on a badly damaged ship. It will also reduce the amount of heavyweight cabling needed on board."



HOLLEY... "Poised for take-off into multi-million business."

Trickett quits for top US job

by Keith Holder

KEITH TRICKETT, one of the men behind Digico, and former managing director of Compeda, has quit Britain to become Gerber Systems' vice president of sales/marketing in the US.

The move follows speculation that he was forming a new CAD/CAM house in this country with Dr Norman Schofield, ex-technical director at Compeda.

This fell through, said Trickett, "because we couldn't raise funds at reasonable terms. The venture was not going to be small and I was

not about to start on a shoestring budget."

"The trouble with this country," he continued, "is that we are very good at inventing things but the financial services are slow to back something new and nothing gets carried through."

His position at Gerber will give him responsibility for exploitation of technology, mainly in mechanical and chemical applications, using a "small dynamic group".

He said the size of Gerber, combined with the relative autonomy of his group, had figured strongly

in his choice to join, "besides which the US is currently a centre of activity".

Asked what he thought of the Cadcentre plan to move into the US market, he replied, "It's difficult to know what they have to sell. I think the main reason the US buys from Britain is more to do with technology - they're not really aware of the software tools developed in the UK."

Despite the move and his optimism about the US scene Trickett added: "I haven't torn up my British passport yet."

Save on maintenance

by John Kavanagh

A UK FIRM is offering Digital Equipment users memory boards which, it claims, help pay for themselves in saved maintenance costs. Computer Matching Services of Woodford Green in Essex has introduced boards for DEC's Vax minicomputers with five-year warranty.

The one-megabyte board costs £1,950 and two-megabyte boards start at £3,300. DEC maintenance is about £18 a month on one-megabyte boards, or £1,000 over five years.

"The maintenance savings will be very big for a user running

three or four Vax machines, perhaps with six megabytes each," said Owen Smith, founder director of Computer Matching Services.

"We're putting our money where our mouth is on the reliability of these products. We also offer 30-days' free trial."

The boards are made by EMC, one of the biggest memory suppliers in the US. Computer Matching Services is also introducing EMC's upgrade kits for smaller Vax systems. These kits enable users of the original Vax-11-750, for example, to go up to eight megabytes. DEC limited the memory to two megabytes.

Digital sponsors seminars

by Caroline Burgess

DIGITAL Research is sponsoring seminars for OEMs and software developers in a bid to keep up-to-date and increase cooperation between them.

"The market needs to be ideas and solutions," said H. Bailey, Digital Research director of European operations. "Software's life is not long so you have to enhance products continually. And customers are demanding steadily increasing standards."

The two-day seminars will take place in London, Paris and Munich. The first day will be an update on recent developments and the second will consist of tutorials looking at problems encountered by developers.

The London forum will be at the Cafe Royal on October 17-18. Among the speakers will be the NCC group director marketing, who will outline details of development schemes with the NCC, and a developer specialist list from the US.

Tutorials will cover design for the concurrent environment languages and graphics, once software and productivity is there will also be a feature to support a product one it been marketed.

Two seminars a year are planned for each venue. The Munich forum is scheduled for October 21, and the Paris forum for November 10. Forums held earlier in the year in London and Paris were attended by over 750.

Apple Computers is to let European software developers reference on October 3-4.

Cincom puts its money on Mantis

by Nuala Moran

"MANTIS will double programmer productivity in 90% or we will give you double money back." This is the offer from Mantis distributors com Systems, and it is one of the competitive offers DMS systems under CICS.

Users who want to take advantage of this offer will have to pay £1,000 for a 60-day trial. It will include three days' training for programmers, which will be compulsory part of the trial. Terry Booth, Cincom UK managing director.

"Mantis can improve application development rates once eight to 10 times," Booth, "so we don't feel we're taking much of a chance with offer."

"Cincom doesn't have a Mantis. The present UK base does this."

Booth estimates that there are over 100 DMS and UFO users in the UK since its launch in April 1981. At the moment there are 80 UK users and Booth says systems were sold in September.

"This is just a way of being more productive in developing our products. It is physically difficult to visit all our potential customers and this way we can then come to us," said Booth.

Anyone who wants to take advantage of this offer will have to select their own criteria for choosing programmer productivity. Booth said: "If a customer doesn't want to achieve double productivity, he will truly get no money back, no questions asked."



TRICKETT... "Nothing gets carried through in UK."

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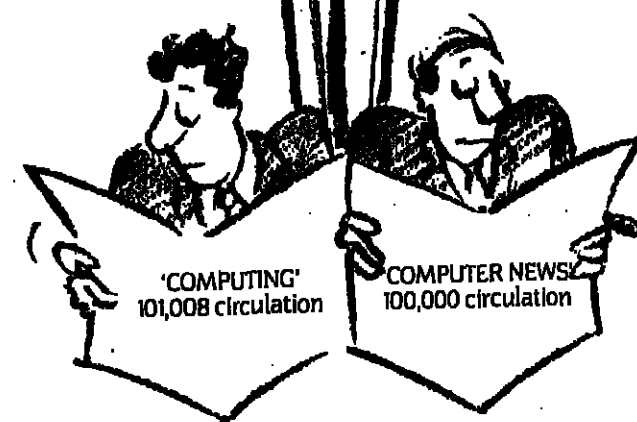
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HUENKE... "Esprit has all the political will it needs."



MURAKAMI... Outlines progress at ICOT.

World's programmes receive a once-over

John Riley reports on the progress of computing towards the fifth generation

ABOUT 160 delegates, mainly from computer companies in the UK, last week took a long hard look at the world's current long term programmes to move computing into the next generation. The occasion was SPL Insight's second Fifth Generation World Conference held in London.

Heads of the three most highly focused IT programmes, the Japanese Fifth Generation Project, the British Alvey Programme and the European Esprit Programme, gave accounts of progress so far. There were also presentations on the more scattered US, German and French initiatives.

Although largely descriptive, the papers generated lively discussion about the approaches, aims and techniques used in each programme.

Discussion centred around the need for logic programming, the knowledge based systems research, whether sequential machines should be abandoned

"A national centre for IT should be possible in a small island."

totally, and whether the aims of the various programmes were achievable.

There was a good deal of puffing up of national achievements and cosy academic bickering. A constant leit-motif of the proceedings was a provocative videotape prepared by the pioneer of artificial intelligence, Ed Feigenbaum of Stanford University, which was segmented and shown a bit at a time over the three days.

One of the earliest papers was a call for international co-operation by Kazuhiko Fuchi, director of Japan's Institute for New Generation Computer Technology (ICOT), which is the nerve centre of Japan's Fifth Generation Programme.

"Our project is not to make Japan a stronger animal - economy is just so that we can live, but is not the goal of our life - we also want to contribute to the world, and avoid duplication of effort," he said.

He added that he was offering co-operation not from a position of weakness but from one of strength. "It is not only my personal opinion, the people within MITI now also want to make research open to the world."

Kunio Murakami, head of one of ICOT's research laboratories, outlined progress towards producing a software supported development system at ICOT. It would comprise a relational data base machine (Delta) and a sequential inference machine (PSI, a Prolog work station) which were both scheduled for completion next year.

Fuchi confirmed that when the two machines are linked in 1985, the work towards developing automatically generated software, which currently had a handful of people working in that area, would be considerably expanded.

Feigenbaum, reviewing the Japanese progress, considered that they had shown a "better than usual learning curve", and although progress towards the PSI had gone more slowly than expected, the work in the other areas had gone more quickly.

Feigenbaum, hit out at the Prolog language, which is the basis of the Japanese machines, arguing that too much adherence to Prolog was risky, because it was not yet a proven language. "The vast amount of know-how attached to Lisp will have to be reinvented," he said.

That view was contested by Fuchi, who said he believed that logic programs were important because of the need for new architectures, which were parallel rather than sequential. "If we base all software on logic based languages, then we make software engineering much easier," he said.

Practical examples of how rudimentary knowledge bases are being applied in Japan were provided by Shigeru Sato, deputy general manager of Fujitsu's Computer Systems Division. His presentation and timetable of developments were broadly similar to an outline of Toshiba's programme given to the IFIP'83 conference in Paris last week by Kenichi Mori, manager of Toshiba's Information Systems Laboratory at Kawasaki.

Both companies are broadly in step in their developments of pattern recognition, character recognition and speech recognition systems.

Feigenbaum hit out at the Alvey Programme for being too dispersed physically. "A national centre for IT should be possible in a small island." He also criticised it for not being concentrated enough, with intelligent knowledge based systems not being given a large enough share; for an overemphasis on Prolog; and for weak university/industry ties compared with the US.

Another serious problem he drew attention to was the "missing generation of UK talent - which is in the US", because of salary differences which are a factor of two to three times greater than in the UK and better facilities.

Britain also needed a "technological hero of the second computer age", who could lead the programme. "You need both a chief surgeon and a hospital administrator," he said.

Above all, however, Feigenbaum concluded, Britain needed the will to succeed. He contrasted the healthy respectability of artificial intelligence in the US scientific establishment with the lingering "enfeebling virus" of the Lighthill Report a decade ago, which stamped on artificial intelligence and the important pioneering work being conducted by Donald Michie in the subject.

Brian Oakley, director of the Alvey Project, replied that with the spread of subjects within the programme, leaders were needed for each field rather than "a man for all seasons".

He considered that the Lighthill Report was "not as destructive as portrayed - and besides that was



FEIGENBAUM... "Britain needs technological hero."

10 years ago". He concentrated on the "revolutionary" nature of the funding of the Alvey Programme from three government departments and British industry. He also drew attention to recent notable British "firsts", including liquid crystal display technology, and to Britain's chip used by Sim, claim in his flat screen television to cope with distorted raster.

The European response to the Japanese Fifth Generation programme, Esprit, was described by Horst Hueneke, director of the microelectronics programme in the European Commission's IT Task Force. The 1980 million project still has to gain financial approval.

According to Hueneke, it had "all the political will" it needed to get through. The one-year pilot projects in advance of the main programme had already been selected and begun.

Speakers from France and Germany drew attention to the small scale of programmes in their countries. These were mainly

developmental, and scattered search projects. "For a country arch-planners, there are no flowers blooming in many different places," said Oakley of the French programmes.

The US is not specifically to the Alvey programme, but Feigenbaum formed the conference of developments in artificial intelligence currently underway.

The most important of the the inappropriately named the electronics and Computer Technology Corporation (ATCC), is a research organisation funded by a consortium of US companies, including IBM, Equipment, Control Data, Honeywell, NCR, Sperry, Motorola, NatSemi, and others to compete with IBM.

The programmes initially undertaken are in the fields of microelectronics, VLSI, computer aided design, software productivity, such as artificial intelligence, knowledge based systems and image processing.

Another major US project underway is the Arpa Plan Advanced Research Project Agency. The agency funds research, mainly for defence, and about of the cash is for military applications of artificial intelligence technology.

"Super speed is the goal," Feigenbaum, pointing out that that was necessary for pilots and missile test systems.

Feigenbaum affirmed that "US is determined that its market share of the computer industry does not slip away to Japan", but that it was concerned about the Alvey Esprit initiatives.

"The European threat was more credible with a demonstrated well organised EEC with co-operation," he said, "the diminution of infighting is a company's."

Donald Michie, professor of machine intelligence at Edinburgh University, and a pioneer of knowledge based systems in UK, announced that he had set up an independent research establishment, funded by industry, associated with Strathclyde University.

The running debate was use of logic languages. "We make the distinction between programming and Prolog," Robert Kowalski, professor of computing at the Imperial College of Science and Technology, University of London, who was one of the developers of Prolog, said. "The reason that Prolog is so good is it is so bad. It has a tremendous future."

Michie added: "We are not Prolog junkies, but for the first time in history we have written in Prolog and then used it in Pascal or C, or whatever, suitable to the constraints of a customer."

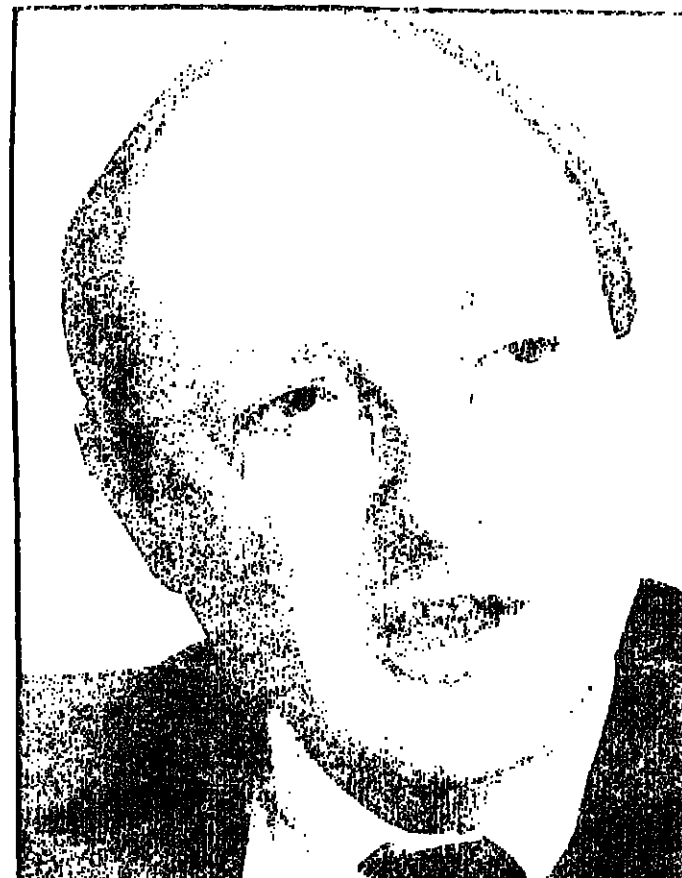
The other debate was parallelism. Fuchi defended the move towards parallel processing. "It's obvious," he said, "we need more power. Logic systems are to become popular in everyday life by reason of lower cost, and we need to use larger integration, not just logic speed. Device technology is parallelism."

Summing up the whole Japanese Fifth Generation approach, he added: "We are just preparing a parallel machine for the future. We need a research to determine which architecture is best and must be alternatives - we're all open."



FUCHI... "We want to contribute to the world."

MICRO NEWS



ELLENBY... "Expensive - and it's going to stay that way."

Bridge connects mini and micro users

by Keith Holder
USERS of DEC mini and micro hardware can now link up and communicate thanks to a single board system from Virtual Microsystems (VML).

Called the Bridge, it allows any machine, from the Vax downwards, to link through the CPM operating system to form distributed systems of unlike machines capable of interchanging programs, and using a mass storage system for files. It carries full DEC approval and will be partly marketed by them.

The aim is to provide organisations running a DEC mini the chance to bring any other personal computers they have under the control of the main system. Opportunities also exist for companies which only use micros at present to link through a small DEC mini, say a micro PDP-11, either to expand or upgrade their system.

Mike Cleary, managing director of VML, said: "A company does not know how much important information is held on the floppy discs of personal computers."

"Though these are playing an increasingly important role, a bridge system can provide the

equivalent of a PC/M personal computer, at less cost, and enable the DP department to regain control since all the files will be held on mass storage system and will be subjected to regular back-up procedures."

The device works by building a virtual microcomputer within the DEC environment using software simulation techniques. A hardware accelerator called a Z board provides four Z80 microcomputers, each with a 64K memory, and a fast bit processor to cope with communications and protocol.

With the Z board running a workstation operator is allotted one of the micros for as long as intercommunication is needed. Should the demand on the system occupy all the available micros on the board, additional operators can still run CPM using the software simulation section, though this is slower.

Up to 16 Z boards can be fitted to a single host computer, giving an installed capacity of 64 workstations. The host computer's mass storage is treated as a "virtual floppy" which, under CPM, can hold up to 64 files and can grow dynamically to four megabytes.

NatSemi 32-bit is due

NEXT week sees the formal US launch of National Semiconductor's 32-bit microprocessor, the 32032. Europe will see it five days later. This fully 32-bit member of NatSemi's 16000 family - with 32-bit data bus as well as 32-bit internal registers - should reach customers in sample quantities early next year, which should put it ahead of rivals from the other semiconductor houses.

Zilog, which launched its Z80000 32-bit two months ago, is reckoning on sample delivery in the second quarter of 1984, and it looks about the same timescale for Motorola with its 68020.

Intel's offering in this general-purpose 32-bit microprocessor market, iAPX 386, does not look like appearing before autumn 1984.

There are 32-biters from Hewlett-Packard and Bell Laboratories already around, but only in internal use - and NCR is delivering its 32-bit chip set while Intel pushes on with its Ada-oriented iAPX 432.

Taiwan-made kit is coming

by Caroline Burgess
TASHKI Computer Systems, a new London-based company, is hoping to break into the microcomputer market by selling cheaply. It will keep its prices down by distributing machines manufactured in Taiwan.

Included in the price of £1,080 are a Z-80A 6502 processor giving 64K RAM, two 5 1/4" slimline disc drives, 12in monitor, keyboard, eight-slot expansion unit and various adaptors.

Called the Om 8064, the machine is currently being reviewed in the UK. Kaidip Tando, Tashki managing director, sees this as the best way to advertise the product. An advertising campaign will start in November when the machine is available.

Tashki aims to market the machine throughout Europe and Scandinavia. But it has not yet signed any agreements with distributors. Another company will be set up to market in Germany.

Grid trains its Compass on European market

GRID SYSTEMS, California seller of up-market portable micros, is moving in on Europe. It has set up an international marketing division under Yorkshireman Roger Higgins, and is recruiting dealers for the \$8,000 multi-tasking 16-bit Grid Compass computer.

"It's high time we came into Europe," says chairman and founder John Ellenby, also an expatriate Englishman, finally settled in California. "We have Stateside customers who want us to."

He sees initial European sales coming from subsidiaries, and parents of present Compass users in the US.

There are small numbers of Compasses already in Europe, but Grid's push into European offices and briefcases has been waiting on proper support facilities. These are now coming into place and the European operation should be running in the first two months of next year, says Higgins. The UK, Germany and France will figure as the big markets at first.

When it gets here the sleek self-contained portable Compass will sell at the equivalent of its \$18,150 US price tag - getting on for £8,000 when taxes and shipping costs are added in.

"Sure it's expensive," says Ellenby. "And it's going to stay that way."

Grid has never gone for mass markets with the Compass and its surrounding Navigator system, which gives communication to mass storage and other Compasses. It has consistently presented the machine as a speciality product, peddling its uncompromising European design and tidy dimensions (2 x 11 1/2 x 15 inches) as one-upmanship symbols for American executives.

It only recently established a distribution network in the US

alongside its direct sales to Fortune 500 companies, and, increasingly, US government and military establishments.

Good looks are not all the machine has going for it. It has an 8086 processor, with an 8087 to beef up arithmetic handling, with 256K of RAM and 384K of bubble memory. External floppies, and Winchester drives, can be added to fit a briefcase with the basic unit - are available for local mass storage. Extra file space comes through Compass Central, an 80186 based hub for a network of 32 Compasses, and connection to mainframes.

But its big bonus is the flip up flat screen - a fan diagonal amber-on-black electroluminescent display giving 24 lines of 80 characters and speedy, well defined graphics.

Software packages, running alongside its direct sales to Fortune 500 companies, and, increasingly, US government and military establishments.

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Grid's own Compass Computer operating system, Intercol or MS-DOS version 2.0, convert data from spreadsheets, to an arrangement of graph types, use usual WP and database tools, and handle data communications.

Communications are very much part of the Grid system's offering, allowing users to plug into remote data sources through phone lines. US machines have built-in modems and have a telephone handset as an optional extra. Ellenby has been talking to the UK's British Apple, Baud for Telecommunications.

"In the UK, we are not in time to catch the wave of radical telecommunications improvement," he says. "There's an awareness - an openness."

Four-year-old Grid has now been funded to the tune of \$30 million.

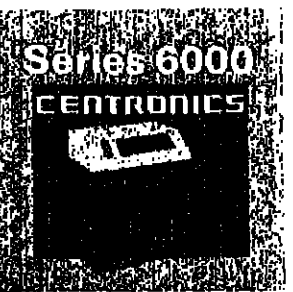
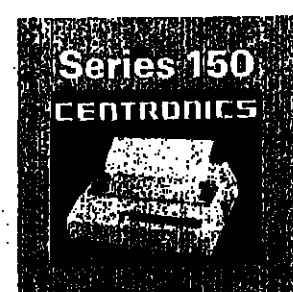
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Checkmate for chess champions

CHESS mastery was regarded as one of the highest accolades of the intellect - until computers started playing the game so well. Now it has sunk to the intellectual level of night's and crosses in our imagination, a game computers can play as well as, or better, than we can.

The latest blow for computer chess was struck last month at Munich when world champion Anatoly Karpov was held to a draw by a mere chess machine costing just £258, the Mephisto III.

Karpov admittedly was playing 20 other games at the same time, and even world champions can slip up in such conditions. But the development is still significant because until recently it has taken powerful mainframes to play chess at a level likely to give Karpov cause to ponder.

Until 1979 chess international master David Levy, one of the world's leading authorities on computer chess, had not been beaten by a machine. Since then he has been beaten twice, and now for the first time it looks as if there are dedicated chess-playing computers at affordable prices capable of beating chess masters.

The most surprising outcome is that philosophers now say we must revise our beliefs in the nature of human intelligence.

We should not esteem chess masters, they say, because all they are doing is to check a range of possible options and picking the highest option most likely to succeed. Instead we should admire the more common ability to pick chess pieces out of a box and set up the board.

This argument unfortunately melts in the heat of the facts. Computers use a different method to play chess, involving an exhaustive search of the next few sets of possible moves. There is a little more to it than that, but not much.

People, or chess masters anyway, use a much more subtle approach that involves pattern recognition. There is no need to keep on re-checking combinations of moves, and the game is a slowly unfolding drama with new ideas mingling with a longer term plan. In this sense chess is typical of many human activities. Only because there are a few rules and clearly defined domain can computers do it as well.



Open plan may not be the way to programmer productivity.

Programmers' private world

THE trend toward open plan offices could be reversed by a recent US experiment in programmer productivity. F&W, which produces 10 million lines of code a year, moved 35 of its programmers into small sound-proofed private rooms without windows, but well loaded with expensive computing facilities.

Productivity soared by 40% in the first year of the experiment. The company was surprised by the reason the programmers gave for their better performance: simply that they found the quiet, privacy and comfort conducive to grinding out the code. I am not surprised. The conventional wisdom is that people work

better in open offices. But programmers are a breed apart. Many of them resent any interruption during a hard debugging session at the terminal, and some feel inhibited by a large human presence around them. And anyway, if the only window on the world is a VDU, you will look at it.

Micros take star role on Saturdays

CENTRAL TV has already been in its first attempt to broadcast a live program on its Saturday Show. But undaunted producer Tommy Boyd has an ambition to upstage the BBC by introducing his 2½ million viewers to interactive computing.

The first part of the plan is to give some viewers a modern to put data from their own home computer into a games program held on Central's computer. The viewers will meanwhile look on as amusements.

There is no reason why it should not work. The idea of a modern is, after all, old hat. The lucky viewer just attaches the modem to a home computer at the end, plugs it into a telephone and, other, then dials the number by Central to hook up to its computer, and feeds in data following instructions given on the programme.

No problem? Unfortunately, these things rarely work first time. But Boyd intends to risk to show gradually into the experiment, introducing more advanced techniques each week during November and December.

The most interesting part of the experiment will come later when the programme will invite viewers to control a robot in the state from their home computers, via the modem.

"We might have a game to go people to move the robot and the floor and pick up and drink cup of tea," Boyd says.

This could be the first move toward the science fiction dream of having a robot take your holiday for you. Rather than going to a crowded, polluted sun-drenched beach, you would be in your own solarium while the robot fed back pictures of the scene through its vision system.

There would be a world network of robots to be hired like cars to give people the holiday experience of their choice without having a stir from their armchairs.

But meanwhile Central TV has had a few teething troubles. Its first attempt on the Saturday Show to transmit a whole live program failed because of interference picked up from the mains electricity in the studio.

Boyd claims this was the first attempt in the UK to broadcast a large program direct from a computer. The BBC have had to make a tape first and then broadcast it, he says.

Hair splitting this may be, but there can be no denying Boyd's determination to make computers the stars of his show. "It might be a dull area of TV," he admits, "but it might be a whole new game show."

PUZZLER

THERE are many ways to construct an open-topped rectangular tank of a given capacity (say, 100 litres). However, only one way - length, the three dimensions - results in the minimum amount of material being used to give the required capacity. What is this ratio?

To put the question simply: What is the most efficient shape for such a tank? See page 79 for solution.



"Appley's doing his bit for boosting Britain's exports of software - he's engraving."

Third party service is 'failing'

by Keith Holder
THIRD party field service organisations are failing to get their message across to potential users, despite their increased capability, says a report from Input, *Developing User Acceptance of New Service Techniques*.

Bad communications and poor use of marketing techniques are blamed for the disappointing impact on the UK and European markets and the report looks at how this can be remedied.

Doug Eyclons, director-general of the Computing Services Association, thinks the report is on target and comments: "I would strongly endorse what it says. There is a huge expansion potential in the market."

He doesn't think poor marketing is the only thing to blame. "There is also a credibility and educational deficiency to

overcome," he commented. "The problem is how to show the data processing manager that services from third party organisations can be just as good as those offered by the original manufacturer."

The report examines the strengths and weaknesses of remote diagnostics, central dispatch, carry-in service, mail-in service and customer assisted maintenance and analyses users' responses and suggestions for improvements.

Not everyone has been oblivious to these problems, or slow to react. Systems Maintenance and Services has already appointed a public relations agent to promote its services to potential customers. European marketing director Stuart Peel feels that "third party organisations need to strengthen marketing and aggressiveness."

The CSA has just completed its

own survey of this market and concludes that growth potential is on the increase. One major factor influencing this is the growth in use of microcomputers in business. In this situation it is common to have peripherals from a number of manufacturers, making third party service more attractive.



EYCLONS... Huge expansion potential for field service.

University brings telecomms to the world's hungry belt

by Thomas Land
THE University of the West Indies is installing a satellite-based teleconference system to broaden its medical, farm advisory and educational services to its campuses and extension centres throughout the island nations of the Caribbean. Brazil's Federal University of Rio Grande do Sul has designed its own teleconference system.

A meeting of specialists from many countries and international organisations decided that teleconferencing is an essential development tool for the hungry belt of the globe.

The system comprises a combination of telecommunications and computer technology linking large numbers of geographically dispersed individuals and communities. Conferences lasting several months can be held in this way, and specialists can take part in several of them simultaneously without leaving their desks, laboratories or surgeries.

The system offers considerable savings since telecommunications are incomparably cheaper than travel.

The basic principle of teleconferencing is increasingly exploited in the rich world for such commercial purposes as the movement of funds and data. A paper recently

published by the United Nations in Geneva cautions poor countries that many of them "may find themselves effectively cut off from modern scientific communications in the future" unless they participate in the present, still early development of teleconference networks.

Hence the urgency of the pilot teleconference projects mounted in the West Indies and Brazil. The system holds out a promise of solution to many obstacles hindering research as well as higher education, arising from the lack of proper communication facilities in the developing regions.

The West Indian system is expected to be operational later this year. It will initially link the university's three main campuses - at Jamaica, Barbados and Trinidad - with extension centres in St Lucia and Dominica. Each location will have a teleconference room for 20-30 people equipped with a voice circuit and speaker system. Students, tutors and instructors at any of the locations will be able to talk to, and be heard by everybody at all the classroom sites.

The system will also improve the dissemination of information in such vital spheres as public health and agriculture to some of the less developed islands of the region. The West Indian scheme is one of several planned to explore the use of satellite technology.

The Brazilian university has designed its own teleconferencing system in order to avoid the pitfalls of improving technology without a full understanding of its implications. The system provides simple, inexpensive and flexible communications linking medical and agricultural research workers at various institutions thousands of kilometres from each other.

Workplace is compiled by Philip Hunter

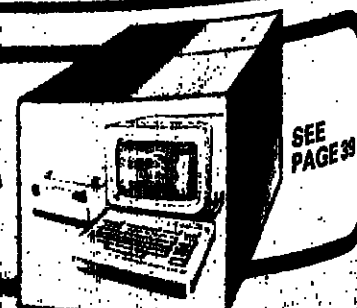
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PEOPLE

Smith and Jones team flies high at Icarus



Icarus Computer Systems now has a Smith and Jones partnership on its payroll. The two men hope to increase business for the North-west London based distributor of Superbrain and Columbia PC computers. Brian Jones (left), who has been in charge of sales and marketing at Icarus for over a year, joins the board of the company as sales and marketing director. Roger Smith joins from Colt Computer Systems as products sales manager.

Computer Automation has formed a sales team for its newly launched SyFAnet distributed processing network. Four sales executives have been appointed. Gordon Campbell brings eight years' experience as a sales executive with Burdett, Roney Vickers and Olivetti. He will deal with the East Midlands. Dick Edwards joins from United Glass, where he worked for 13 years. He will be responsible for sales in West London and Buckinghamshire. Hugh McDaid joins from a sales career in the wine and spirit trade. He will be responsible for sales throughout South-west London, Surrey and West Sussex. Finally, David Giles has been promoted from production manager in Computer Automation's Dublin factory. He will deal with the Irish marketplace.



Carrie Armitage (above) will be playing an important role in Peachtree's penetration of the European market. Responsible for pre-sales support, she will be producing Peachtree's international newsletter, European market research and general marketing activities. She will firstly help to launch Peachtree's operations in Italy. Previously she worked for Hambro Life Assurance in a sales support role.

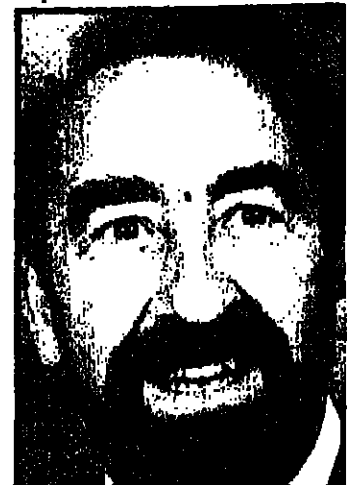
Software specialist in the London insurance market Sherwood Computer Centre has made two promotions to senior technical level. Sue Patel, formerly a team leader on the company's batch processing system for insurance companies, has been made a manager with special responsibility for technical review and enhancement of the Spartacus real-time insurance and reinsurance system. She has been with Sherwood since 1980. Steve Bardell, previously a business analyst with Sherwood's Dataloyd Division, where he has worked for six years, has been appointed a business consultant. He is now responsible for analysis and development of new business requirements for Dataloyd.

Quest International Computer Equipment has appointed David Bennett as sales and marketing director. He joins Quest from Control Data, where his most recent position was OEM sales and marketing manager.

Andrew Ford has joined Insight Database Systems in European marketing. Ford was previously with financial system specialist Star, where he was a consultant.

Promotion has taken Frank Richardson from sales and marketing director to the post of managing director with Lambert Computing Hardware Sales, distributor of DEC, DEC compatibles and a range of other peripherals.

Rodime has appointed Barrie Wilson as marketing administration manager. He joins Rodime from Burroughs in Livingston, where he was activity manager responsible for technical liaison and support between manufacturing, marketing and field engineering departments worldwide.



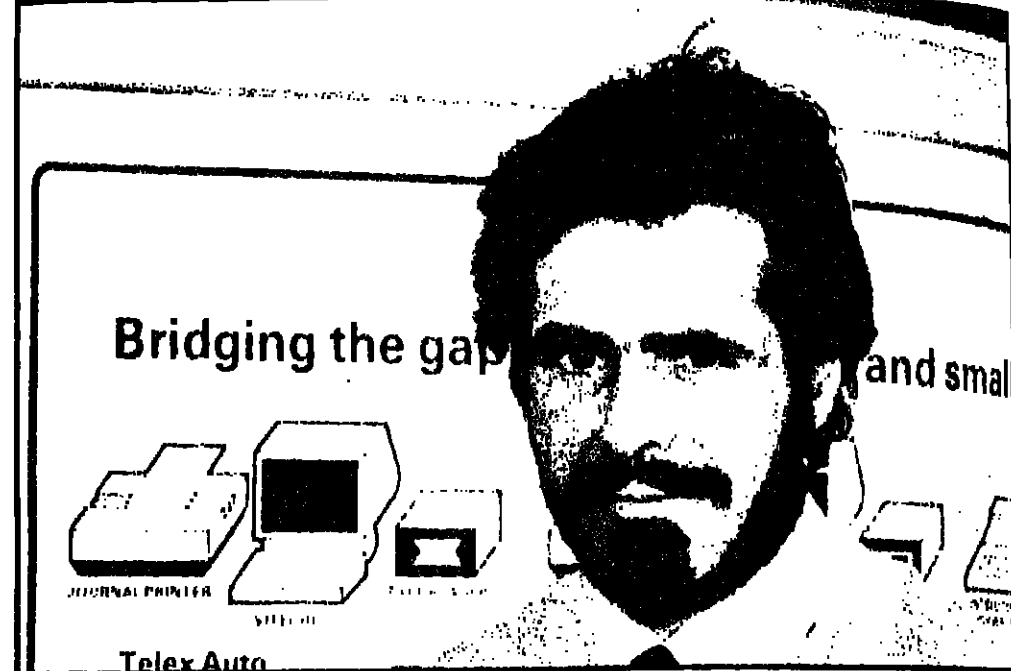
Bob Male (above) has been appointed branch manager, manufacturing division, responsible for sales in the UK and Ireland of MIMS, Geisco's fourth generation application development system for manufacturing companies. Male joined Geisco in 1982 to sell manufacturing software.

Tim Chaney has joined Computers as sales manager responsible for UK and export sales of the Lynx range of microcomputer equipment, including the new 96K and forthcoming 128K models. He was previously a multiple accounts manager at Commodore, where he played a major role in building sales of the Vic 20 and Commodore 64 home computers.

Roger Paradise has been appointed branch manager, Midlands region, for Business Computer Systems. He is responsible for sales and support of the company's range of mini and microcomputer systems. Paradise has been in the computer industry for 15 years and before joining BCL was with ICL for seven years in charge of new business sales in the Midlands.

Gandalf Data has named Tudor Banacu in the newly-created position of European marketing manager for Gandalf Services, SA, its subsidiary in Geneva. Dr Banacu has been an independent consultant in data networking and was previously associated with Datalec a distributor of data communications products, and with Digital Equipment Corp (Lausanne).

Comac Systems, the computer aided maintenance management specialist of Colnbrook, Slough, has appointed Peter Forster (below) as marketing manager. His appointment follows the recent launch of Comac III. Previously he was marketing director of James Clark and Eaton, glazier and glass processor. Comac has also appointed Peter Greenhalgh as Midlands sales executive. Formerly he worked for a lubrication systems engineering company.



British industry is the target of a fourfold expansion plan by Tony Stenham, the new managing director of ATS (Communications), the telex network company. Formerly of Rolls Royce and British Leyland, Stenham plans to achieve his target in four years. Until now, Sussex-based ATS has concentrated largely on the business market, both in Britain and overseas. From his own experience in industry, Stenham believes ATS is ready to take on what he believes is a largely untapped industrial market. He plans to do this through a programme of major product

launches, building on the ATS expertise in telex and electronic message sending systems. The company will aggressively market its expanded range through a re-organised distributor network in Britain and overseas. Stenham moved to ATS from Thorn EMI. An engineer by training, he has spent all his working life in industrial management. He says: "What I hope to bring to ATS is a driving force. There is an awful lot of business in the industrial sector. There are people who use our systems, but do not know we exist."

Douglas Gemmell has been appointed deputy chief executive of Information Technology Ltd, the parent company for Computer Technology Ltd, Office Technology Ltd and Network Technology. He joins ITL from Smith's Aerospace and Defence Company where he was director and general manager of the Cheltenham Division for six years. He was previously operations director at Membrain, responsible for engineering, production and quality control.



Simon Nieboer (above) has been made OEM sales director of the Peripherals & Victor Division of DRG Business Machines. Previously he was sales director of the Peripherals Division only. Chris Lindsey has been appointed product manager at DRG for the Victor Division and is responsible for marketing the Sirius microcomputer through DRG's own network of DRG Sirius dealers. Previously he was a senior sales executive with Nissei Sangio, part of the Hitachi group. Deryk Randall has come from Microfacilities to become a sales manager for Victor dealer products. He will support DRG Sirius dealers in the south of England.

Zygal Dynamics announces the appointment of Desmond Flynn to the board. He is responsible for sales and marketing throughout the Zygal group. Flynn joins Zygal from DRG Business Machines where he was sales and marketing director, before joining DRG in 1978 as South-eastern regional sales manager, he held sales and management positions with Data 100, ICL and Olivetti.

Catherine Ham has joined Rediffusion Computers Ltd as systems analyst for the London south support region. Previously, she spent three-and-a-half years with Computer Systems Development Inc, based in Dallas (where she set up the new office) and New York (as a consultant). Mike Dwyer joins Rediffusion Computers as systems analyst, customer services operations. He is a former ICL operations consultant.

Mike Wenn has joined Delta Data Systems at its Welwyn Garden City headquarters as sales development and administration manager, having previously been with Harris Systems since the early 1970s, when it was Sanders Data Systems.

Stephen Page (right), one of the founder directors of Sapphire Systems, a producer and distributor of serious business software, has been appointed managing director of the company. Formerly chief accountant with W. Boulter & Sons Group, Page founded Business Solutions in conjunction with W. R. Spouse in 1979, which merged with Essex-based Sapphire Systems in 1982.



DIARY

OCTOBER 4
Man-Machine Interaction Programme is the theme of the British Computer Society Microcomputer Specialist Group first meeting of the 1983-84 session, at Haden-Powell House, Kensington, 1.30pm. Cost £1.50. Details from Robin Phillips, secretary, 21 Rye Close, Saltdean, Brighton BN2 8PP.

OCTOBER 4-6
Programming Business Systems in Basic is an NCC course, at the London Training School. Cost is £365. More details from Course Administrator on 061-228 6333.

OCTOBER 5
Meeting of the British Computer Society Displays Group - Input Techniques, Devices and Standardisation - at the Stanley Gill Room, BCS headquarters, London. Charge is 50p for members, £1 for non-members. Details: 01-637 0471.

OCTOBER 10-11
AGARD, the NATO Advisory Group for Aerospace and Development, is running a lecture series on Development and Use of Numerical and Factual Databases. Held in London, the lectures are free. Details: Defence Research Information Centre, Orpington 32111.

Wang (UK) is holding four half-day seminars covering office automation and word processing. Fairfield Hall, Croydon. More details from Sara Perry on 01-621 1010, ext. 272.

CONFERENCES

World Communications - Tomorrow's Trade Routes is the title of a conference to be held at the Royal Lancaster Hotel, London, on December 7. Cost is £125 (bookings of 10 places - £900). The conference will concentrate on the impact of developments in new technology and telecommunications on world trade. Speakers will include Cecil Parkinson MP, Sir George Jefferson (British

OCTOBER 11
Teletex - a New International Communications Service, is the title of a talk by Dr A. H. Robinson, head of office communications and systems section, BT Research Labs, run by Honeywell in London. Details: 01-748 4191.

OCTOBER 12
Seventh annual symposium on computer applications in medical care. BCS Medical Group, Baltimore Convention Centre, Baltimore, Maryland, US. Details from Dr Virginia Saba, Nurse Consultant, Division of Nursing, Bureau of Health Professions, 3700 East-West Highway, Room 3-50 Hyattsville, Maryland 20782.

OCTOBER 15, 17
Data Protection is a one-day course in London on November 15 and Liverpool on November 17. Instructor, Joseph Kenny, details from Keith London Associates, 07073-30114.

OCTOBER 19
British Computer Society Data Communication Specialist Group runs a meeting called LAN, PAK or PACX. Which is the Most Office Data Communication? will be held at Birkbeck College, London. Details: Peter Radford, Logica, 01-636 5440.

OCTOBER 21
Scientific Computers is running a seminar on Macsyma, a mathematical software package, at the University of Sussex. Fee is £17.25. Details: Graham Wright (04446) 5101.

Telecom, Sir Kenneth Corbett (STC), David Fimberg (British Computer Society) and Sir William Barlow (Thorn EMI Engineering). Conference chairman, Sir Donald Maitland, chairman of the UK National Committee for World Communications Year. For further information, contact the British Computer Society, Mansfield Street, London W1T 3JF. Tel: 01-637 0471.

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STERN (right, with French Prime Minister Pierre Mauroy) ... Putting up a bull front.

Backs-to-the-wall Bull looks brighter

Jack Gee visits France's Bull to discover how its fortunes have fared since changing its name from Cii-Honeywell Bull

IT'S still backs to the wall at Bull. France's state-controlled computer maker, though chairman Jacques Stern and general manager Francis Lorentz are putting up a bold front to the business world.

They have taken the opportunity of the Sicob gathering of industrial experts and journalists in Paris to present the achievements of the company since the socialist government came to power and the tasks which lie ahead.

Within a few months of changing its name from Cii-Honeywell Bull, the top management at Bull reports that, thanks to improved group sales it expects to halve last year's losses, bringing them down to FF600 million (£48 million) in

the current trading year.

Stern says this brighter outlook reflects a 28% rise in Bull's sales during the first six months of the year, compared with the same period in 1982. He is confident that group sales will come close to FF11 billion (£880 million) for the full year, compared with FF8.13 billion (£650 million) in 1982.

However, the Bull management recognises that the group is unlikely to show a profit before 1986, the closing year of France's five-year electronics plan.

The main objective of the plan is to raise French high technology industries to the level of those of the US and Japan by 1990.

When Stern and Lorentz moved

into the hot seats at Cii-Honeywell Bull a year ago, they took on the most unenviable jobs in France's computer industry. The till was empty; manufacturing was in a state bordering on confusion; staff were demoralised and in disarray; the customers were wondering whether they should turn elsewhere; and the relationship with Honeywell had gone sour.

Honeywell refused to inject any fresh funds into the group, in which the French government had reduced its stake from 49% to 19.9%. "Now," Stern claims, "relations with Honeywell are excellent."

Since the middle of 1982 Stern and Lorentz have embarked on a series of crash courses to instil new courage into their staff; hired new, able teams of engineers and sales people; and begun the slow, painful process of trying to restore the company to financial health.

In the process of the transformation of Cii-Honeywell into Bull, the company acquired an office automation subsidiary, Transac, from Compagnie Générale d'Electricité and SEMS, a minicomputer venture from Thomson.

Bull is about to assume new computer responsibilities in the division of assets between CiiE and Thomson, and Stern has been advised by the government what to expect. But, in his encounters with journalists over the past few days, his lips have been sealed on this score.

An essential part of the new Bull strategy is to set up a series of subsidiaries with clearly defined responsibilities for each area of activity and with instructions to show how much money they are making (or, in most cases losing). Peripherals now concentrates the group's efforts on peripherals, Bull-SEMS concentrates on the old Thomson minicomputer market and Bull-Carte Memoire on developing and selling the Smart Card, a field in which the company shares with Philips Data Systems (France) a worldwide head start.

Stern said: "Cii-Honeywell

As part of a major shake-up in top management, Bull has taken on 3,500 new staff, with the acquisition of SEMS and Transac. Because of erosion through redundancy, staff numbers have remained steady for the past year, at about 25,000.

Last year the 21,000-strong workforce at IBM-France produced a turnover of FF22.2 billion (£1.78 billion), compared with Bull's FF9.5 billion (£760 million). Ironically, Bull lost FF1.3 billion (£108 million) - the same as IBM-France's profit.

As a state-controlled firm, Bull cannot undertake the improvements in productivity and pruning of staff which the logic of the situation dictates. It carries a cumbersome product range - the result of zig-zagging strategy over the years, which it cannot shed without losing its traditional customers.

Last year state control saved it from the bankruptcy that would have faced any other company in the same critical condition. In debts totalling FF7 billion (£580 million) and it cost over FF800 million (£64 million) to service them.

In spite of massive state help in cash, Bull will receive only FF250 million (£20 million) of the FF500 million (£40 million) originally earmarked from the government's research budget for 1983. The government will provide FF1.5 billion (£120 million) in fresh capital this year, but this will drop to FF1 billion (£80 million) in 1984.

The task ahead for Stern and Lorentz is daunting. It is difficult to see how Bull can attain its objective of reaching financial equilibrium in three years.

Stern is enthusiastic about the venture with ICL and Siemens to set up a joint research centre in Bavaria: "English will be the working language," he revealed, and he says that Bull is sending many of its top research people to Munich to work on computer architecture and artificial intelligence with their British and German colleagues.

He rules out the joint development of a supercomputer though ICL is working on a big number cruncher of its own for the French military, with much needed defence ministry funds.

One of the cruellest dilemmas confronting Bull results from the agreement with Honeywell in 1980 to build computers that are not compatible with IBM's. Today Bull's survival depends on sales of machines which lack the compatibility increasingly sought by customers. If Bull changes its policy, it risks losing its present customers to Honeywell and NEC or seeing them switch to IBM.

Stern admits that Trilogy, in which Bull has a 7% stake, is playing an important role in the French firm's strategy. If Trilogy makes its breakthrough into hyper-computers, using new integrated circuits, Bull is certain to profit. It would then be well geared for a counterattack against IBM.

But time is running out for Bull. With only three years to go Stern and Lorentz will do their best to hoist Bull up by its own bootstraps. But, without huge investment in research, which the company cannot finance and to which the French government is making only a parsimonious contribution, they cannot be certain of success.

SOFTWARE MONTH

Word processing as we know it is being put out to grass

Word processing is really just another computer application. Software Month takes a long, hard look at its prospects

THE year of 1983 has seen the rediscovery of a long forgotten truth: word processing as we know it today is nothing more than a computer application.

If it is an application for a computer, then any (or almost any) computer should be applicable. Word processing thus rightly belongs as much to the personal computer as it does to the traditional word processor.

Nevertheless, most people immediately and automatically still associate the term "word processor" with a standalone, highly-specialised microprocessor-based system totally dedicated to the function of improving the efficiency of office typing.

The world processor is thought of as a completely separate animal to the microcomputer.

There are two reasons for this, both of them based on the history of word processing. In the first place, the modern word processor is the product of two separate but converging lines of development.

The earliest word processors evolved in a direct line from even earlier automatic typewriters. These were purely mechanical devices, often using punched paper or cards for "memory", and ceding nothing to electronics. Automatic typewriters were, indeed, completely separate from the early computers.

However, as the computer developed along its separate line, it became more and more apparent that programmer productivity could not be ignored. Of paramount importance to productivity is the editor.

In many cases the popularity of any one computer often bears a direct relationship to the quality of its editor. It was logical, then, that

computer manufacturers should spend a lot of time and energy on producing ever-better system editors.

Within this climate it was equally logical that sooner or later a computer manufacturer, particularly if it was already involved in the typing function, would take the relatively small step of replacing the mechanical elements of the automatic typewriter with more reliable electronics, give the whole thing a computer brain, control it

The original concept of the automatic typewriter as a separate entity to a computer has remained in the consciousness of the consumer

by a system editor, and call it a word processor.

And it will surprise nobody to find that the company concerned was IBM.

It didn't happen overnight, and it is difficult to say when the automatic typewriter gave way to the word processor. IBM's embryonic word processor was, for example, little more than a mechanical typewriter with some magnetic memory and a control unit stuck inside.

It would be misleading, however, to claim (except in jest or symbolic terms) that IBM

"invented word processing" (as has recently been suggested). IBM was merely in the right place at the right time (that is, everywhere, as

in global domination), and offered the line of least resistance for an evolution that would have happened with or without IBM.

Nevertheless, IBM research and development has played an important part in shaping the modern word processor (particularly, for example, in the floppy disc and Winchester drives), and could thus fairly be described as a catalyst to the development of the word processor.

However, even with the IBM connection, this evolution from mechanics to electronics was gradual rather than sudden. It is mainly because of this that the original concept of the automatic typewriter as a separate entity to a computer has remained in the consciousness of the consumer, despite the fact that the word processor is now a computer pure and simple - with a keyboard (specialised to one degree or another) for input, floppy or fixed discs for storage, a screen and a printer for output, a microprocessor for brains, and software to bind it all together.

The second reason for the continuing identification of a word processor as a different machine to a microcomputer is the very size of the word processing market.

For every one (large, old) computer sold, there is a market for dozens of word processors. Discounting the modern electronic typewriters, an ambitious salesman could say to himself: "Wherever there is an electric typewriter today, there is potentially a word processor tomorrow."

So large was, and still is, this market that dozens of separate companies came into existence devoted solely to word processing. And if the manufacturer of the word processor doesn't (or at least, didn't) manufacture computers, how could the two products be the same thing?

But the myth is now being dissolved, and the very existence of the dedicated word processor is under threat. The challenge started not simply with the eight-bit microcomputer, but more specifically with the CP/M operating system.

The portability of CP/M software created an enormous potential market for software writers. Slowly, some very advanced word processing software became available to the eight-bit microcomputer.

Two elements had come into play. Firstly, it had become worthwhile for individual software houses to write very clever software, and secondly, with that clever software, sales were able to offer to "turn your accounts machine into a word processor for less than £300".

WordStar is the product that immediately comes to mind - but the fact is that many people consider it to be the best word processor, whether using a PC or a dedicated word processor, currently available.

Small companies that had earlier thought of buying an accounts machine from Olivetti and a word processor from Wordplex now began to think of a single microcomputer using any one of a dozen word processing packages from Monday to Thursday, and an ac-



The power of the 16-bit processor is being harnessed by the emergence of operating systems.

counting package on Friday.

For a while the dedicated word processor fought against this new tide. The first and most obvious option was to reduce prices and companies like Digital Equipment reduced its prices from around £10,000 to around £5,000 (for the WS78 at the beginning of this decade).

The next move was to stress the ergonomic research that had gone

into the physical design of the dedicated word processor.

This year, however, has seen the emergence of the product that is likely to cause the ultimate shake-out in word processors: the 16-bit PC at a price that is often lower than the more limited eight-bit dedicated machine.

And this is at a time when microcomputers are in a period of

transition. We are now seeing the emergence of operating systems that are capable of harnessing the full potential of the 16-bit processor (Concurrent CP/M-86, the expected DOS 3, Unix, Pick and others).

Logic says that few (if any) dedicated word processors will survive against this new threat: logic says that few (if any) dedicated manufacturers will survive at all.



Where word processing is heading? - a 16-bit professional computer.

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Personal micros alter the market

... but dedicated word processing may survive a while yet

TO determine whether the dedicated word processor (being a combination of both hardware and software integrated into a system dedicated to the more efficient processing of office text) can survive for much longer, one needs to examine what the word processing market really is.

There are, in fact, two markets: the large and medium-sized company with a pool of a dozen or more full-time typists; and the many thousands more one-man and a secretary, high street and home based companies - solicitors and estate agents, brokers, consultants and accountants, architects, designers and entrepreneurs.

Three years ago these two markets were served only by the dedi-

cated manufacturer, who, through lack of competition, came to believe that there was just one big market. The latter market, however, is better served by the multi-functional personal computer than by the single purpose word processor - and for the word processing manufacturer, this market is now rapidly disappearing.

Whether you believe that word processors as separate entities will disappear altogether or not depends largely on whether your interest is mainly in personal computing or text editing. "In my opinion," says Tony Plackett, technical director of ACT (Pulsar), "the dedicated machine is redundant. Developments in operating systems and keyboard manipula-

tion allow microcomputers to look like a dedicated word processor when needed and then to revert to other functions."

Although he must surely be thinking of the Sirius personal computer it is also the approach taken by British manufacturer LSI Computers. The 16-bit M4 has no fewer than 61 user-programmable function keys. These can be programmed to produce a total of 256 commands/characters, either by the user during use, or by simply invoking a pre-defined key-table file which automatically sets the keys.

LSI will not only provide a number of ready-made key-tables for the leading software packages - WordStar and Spell Binder word processors included - it will also provide a plastic overlay that labels each function key.

Used with a little imagination, this feature can make WordStar far easier to use, and even more powerful than it originally seems.

Character swaps and sentence deletion - both missing from WordStar's direct capabilities - can be programmed into single keys by the judicious use of block, cursor movement, and string search commands.

"A word processor is nothing more than a glorified typewriter," continued Plackett.

"Computer-processing text is a relatively simple and easily definable operation that WordStar and other packages of its calibre perform with ease. While their speed may be marginally improved, very little in concept needs changing."

"It's really in the adjuncts to the package that developments will take place. For instance, printers are bound to become more sophisticated. The new breed of near letter quality matrix printers could very quickly replace the daisy-wheel, and once ink jet appears at a reasonable price, multi-colour output will become the rule rather than the exception."

Redundancy is clearly a view not accepted by the word processing manufacturers. "Yes, of course, the word processor will survive," says Bill Cottle, managing director of Dictaphone Company Ltd. "It's a question of application."

"On the dedicated machine, the software is designed around the hardware, and is therefore usually superior to the general purpose machine. Word processing applications have about three times the keyboarding of other DP applications - and the user is generally a highly trained and specialist keyboard operator."

"To get the best of both the machine and operator, the system must have a perfect integration of keyboard and software. This is a situation that will always, at least for the foreseeable future, be required - and it is a requirement that can only be met by the dedicated word processor. You could say that it is simply a case of horses for courses."

A similar view comes from Alan Frost of Philips Word Processing. "About 150,000 typewriters are purchased annually for business use. The productivity of the typing station can be increased dramatically by using a word processor," he said.

"It is unlikely that office routine will change, certainly over the next few years, to require a typist to need data processing facilities. Similarly, the majority of people who now need the data processing capabilities of the personal computers are not in the main, large producers of business text. A horses for courses approach would

therefore seem the most sensible route."

"Having said that," continued Frost, "a machine that can only do word processing is not likely to be here to stay. It is unlikely that people will wish to replace their typewriters by machines that can only produce text."

"Most word processors on the market today are also able to do data processing programs."

Here, however, the word processor cannot compete with the personal computer.

As Tony Plackett says: "The prime benefit of word processing on microcomputers is its ability to integrate with other applications."

"Used in conjunction with a spreadsheet or financial modelling package, word processing works on two levels, creating the file to drive those packages or taking the output and adjusting it for presentable management reports."

"And in the next few months we

The future of word processing is more likely to be with Digital, IBM, Wang and, dare we say it, our own ICL, than with traditional manufacturers

should be able to integrate text with proper graphics."

If this is right, that it is indeed a case of horses for courses, then the dedicated word processor will surely survive for a long time yet. The market, however, is both shrinking and rapidly changing in the face of the personal computer.

A company really needs the requirement of at least three or four full-time typists before it can justify a dedicated word processor. But many companies of this size also have or need a central minicomputer, mainframe or microcomputer network.

It would seem unlikely that such buyers would want to mix their suppliers.

In other words, if a company has Vax or IBM mainframes, it is likely to prefer Digital or IBM word processors.

When viewed in this light, it seems fair to say that the dedicated word processing market can no longer support the number of manufacturers still operating, and that of these, it is the bigger companies with established and growing large computer user bases.

The future of word processing is more likely to be with Digital, IBM, Wang and, dare we say it, our own ICL (if it can only get on act together), than with WordPerfect, Aes and the other traditional manufacturers.

A case of horses for courses.

The easy pickings days belong to the past

Software Month has seen word processing's future - it lies in information processing

THE days of easy pickings and rapid growth for word processing manufacturers are undoubtedly past. And one of the main reasons for this is the growing understanding and discernment of today's computer user.

The market is separating into two distinct spheres: that of dedicated word processing within large or medium-sized companies; and that of multi-functionality within smaller organisations, where a computer is used as word processor one day, an information storage and retrieval device on another, and an accounts machine, or modeller in between.

The ability to move data from one application to another is a fundamental requirement for the latter market. But it is the personal computer that has adapted to these demands at the faster rate. The key is in the supply of compatible software, and here no dedicated word processor can possibly match the options available to the personal computer user.

The Sirius user, for example, can first decide where priorities lie: if it is in accounting, first select the best possible accounts package and then look around at compatible word processors; if it is word processing, first select, say, WordStar and then choose between VisiCalc, PlannerCalc and SuperCalc for its spreadsheet, and between dBase II and Res-

cue for information storage and retrieval system. No dedicated word processor can (or could until recently) possibly offer such a choice.

The personal computer manufacturer has also adapted to the new technological developments much faster than the word processor manufacturer. Nearly all new personal computers are announced with at least 16- and sometimes 32-bit processors, while the majority of word processors are still eight- or 12-bit systems. We must always remember, however, that the supply of manufactured goods follows demand, and not the other way around.

If the multi-functional personal computer is the latest technological advance, it is because the market demands multifunctional computers. However, whenever a new technology threatens the old, an event often known as the sailing ship phenomenon occurs. The old technology (in this case, dedicated word processors) does not simply give way to the new (in this case, the personal computer) - it is spurred into a new and rapid phase of improvement just as the sailing ship did when faced with the threat of steam.

One word processing manufacturer that has reacted with rapid and continuing improvements to its product is Compucorp. Compucorp is an American manufacturer

with a UK-based software development team. About a year ago, the company found itself on the short-list to supply word processors to UK universities.

The requirement was not, however, for a straightforward word processor, but for a scientific word processor. Don Tomlinson, Compucorp's UK sales manager, reacted quickly. He arranged for an interface from the Compucorp word processor to the Sanders

age - which they did. With the new printer link, this resulted in the development of a sophisticated scientific word processor within a month or so of the demand first arising.

The Compucorp word processor is actually an excellent example of the way in which dedicated word processors must adapt to the new demands of the computer literate business society. It was one of the first word processors to include a

such as the facility to run JPM, a facility now available to most word processors.

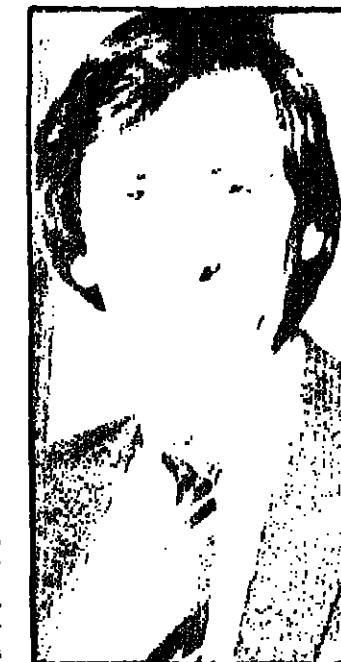
More recent announcements from Compucorp include a networking facility, and now an integrated DBMS. The new database goes much further than the earlier records management feature, and goes more in concept to DP than to word processing. For the word processing user, however, the most exciting development is the way in which it can be used within word processing.

For example, information stored in a database can be recalled directly into a word processing document. A name and address can thus be retrieved from the database and inserted into the document on the screen while it is being composed.

This can apply to any information stored in the database. Commenting on the new database, Tomlinson said: "We are now in the process of piecing together different types of work to complete the office automation picture. Database management is a vital part of this fascinating jigsaw puzzle, providing the missing link between word processing and data processing."

But all these advances are still not enough to halt the erosion of the traditional word processing market.

Compucorp and other dedi-



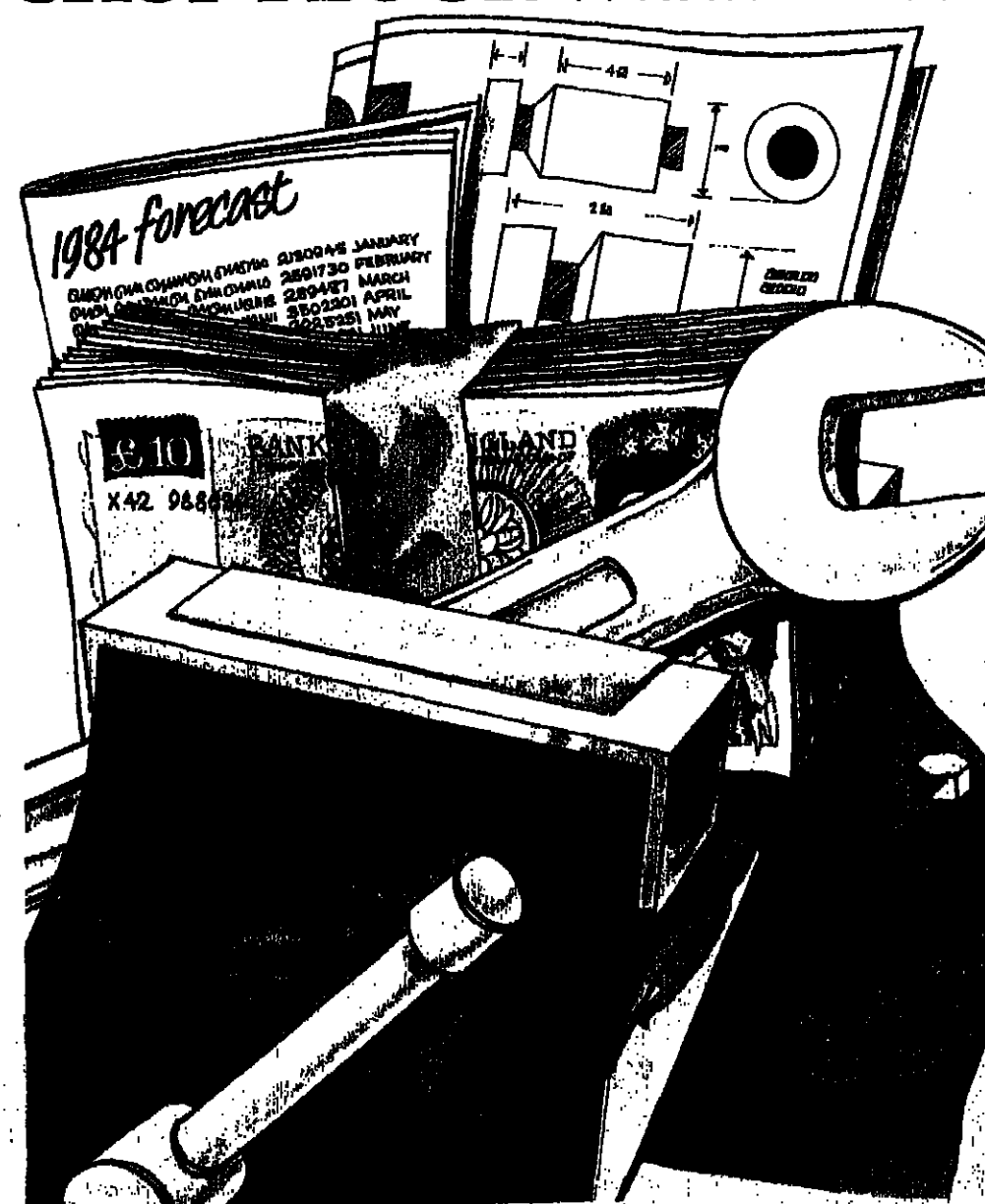
TOMLINSON... Reacted quickly.

icated manufacturers have adopted the approach of developing, or adapting, specialised vertical market packages for specific markets. It is not just the same standalone word processing market that is being affected by the increased demands of the user; the market is changing equally rapidly on larger systems. A few years ago, a word processing package could be placed on a standard minicomputer like the PDP 11, and be called a shared logic system.

Today the market is more discerning. A company that can afford a minicomputer wants more than just word processing for its money.

One wonders, however, if the real difference between a word processor and a personal computer exists in marketing terms alone. After all, we can hardly expect our executive middle manager to jeopardise his macho man image by using a word processor - that's a typist's job.

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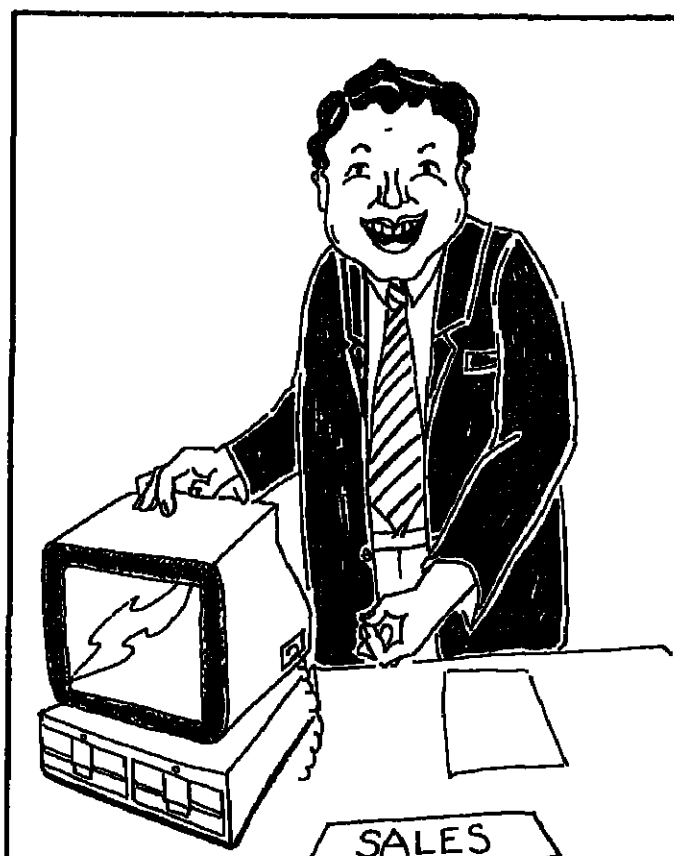
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How to write your software more quickly

David Ferris examines the increasing popularity of application generators

APPLICATION generators have become extremely popular within corporate environments recently. At the mainframe end, Cincom is the clear market leader — it has sold about 1,000 units over the last two years, amounting to over \$30 million in revenues. Its dBase II is the leader among micro corporate users.

The trend is here to stay, because provided the application is right, software development time is reduced tremendously. But until recently it wasn't clear to me why this is so.

We have been spending a lot of time helping information centres provide support for application generators, and while talking to users, the reasons for the reduction

in time have become apparent. It seems to be primarily due to their ability to offer a much simpler and more self-contained development environment.

First of all, the world of database is full of words used in different ways, so a review of what application generators are is appropriate.

There are no hard boundaries between application generators, and other kinds of data storage and retrieval systems. They lie in the middle of a continuum which begins with products which can really be used by end users, such as Focus and PFS, and ends with those full-blown DBMS systems which can only be used by highly trained programmers, such as IMS

or MDRS.

The best known application generators include such products as Mantis, UFO, and ADF on mainframes; and dBase II, Condor, FMS-80, and The Last One on PCs. Because I'm personally most up-to-date on dBase II, I'll use it to illustrate this article's points. The main characteristics which apply most of the time to most application generators are: Fairly detailed CRT definition. You can paint screens directly, specifying simple edit and validation criteria. But dBase II is very poor in this regard: programmers generally end up having to give painstaking row-and-column commands. Multiple file handling. Programs

can access several files at the same time, rather than just one. And dBase II allows concurrent access to two data files, which is insufficient for many of its applications. Interactive data definition. There are nice interactive facilities allowing data structure definition and alteration, including convenient dump and restore utilities. In this regard dBase II is very powerful. Interactive ad hoc access. An interactive command processor lets you do ad hoc query, reporting, and database update in an English-like language. This is another major dBase II strength. Fairly powerful DP logic. Some sort of proprietary high level language is provided. It is used to specify data edit, validation, sto-

rage and retrieval logic, and the flow of control between the various formatted screens and menus. At best, these have the relative ease of use of an English-like language. At worst, they look like a bastardised form of PL/I, Cobol, and Basic. In the latter dBase II's language falls: it's powerful, but often unwieldy.

Given this characterisation of application generators, why should they speed up development to the extent they do? In particular, why should the dBase II programmer be able to write software so much faster, say, than a Cobol programmer accessing VSAM files, using SIF under TSO?

As previously remarked, the main reason seems to be that application generators offer much more of a self-contained and integrated environment.

In a typical mainframe approach to software development, the development staff must be familiar with a wide variety of different system components. Few of these present a major challenge to the intellect taken by themselves, but taken together, they present an almost bewildering hodge-podge of different programs to learn.

To write even the simplest of programs, a large number of sequential interactions between components is required. This mainframe development typically requires familiarity with CCS, VSAM, JCL, TSO, SIF, dumps, compiler control instructions, a linker-loader, and file maintenance utilities.

It's a major effort to become familiar with all these different subsystems. Technologically, it's also an utter waste of time, resulting from poorly coordinated systems software, and design which placed little emphasis on programmer friendliness.

To write a mainframe program is to spend most of one's time thinking about how to shuffle the program from subsystem to subsystem, rather than on how the program itself works.

The dBase II programmer, however, has a much easier time in this regard because dBase II offers a much simpler environment within which program de-

Ferris is chairman of San Francisco and London-based Ferris Corporation, which provides personal computing services to the *in-house* computer professionals of many organisations. His offerings include training on how to support *in-house* computer database systems.

velopment can take place. Using the interactive data definition facilities, the programmer can define a data file in as little as 30 seconds. Then, using the interactive ad hoc data access commands, he can quickly add a file test records.

Unless he is prepared to copy an extremely rudimentary type screen definition, the programmer must then turn to writing *specific* programs in dBase II's high level language. The various data entry and retrieval screens are normally defined in this way, as is the linking between screens, the data edit and validation logic, and the file-handling logic.

Writing these programs is the

It's a major effort to become familiar with all these different subsystems

most difficult part of using dBase II. It's rather like a half-finished, full-blown high level language.

We are finding that many corporate end users are trying to learn it, and most of them are failing in their efforts. The language is too hard for computer professionals to learn, and it isn't hard for the end user, but for busy end users trying to implement a quick and cheap application, it presents the product's Achilles' heel.

On the other hand, the language does have a number of very appealing features, such as a relatively high level of data independence. For example, no data definition needs to take place within programs, unlike Basic or Cobol. This saves programming effort, and it also saves the effort of having to go back and alter programs if new fields are added to the data.

DEC LITIGATION

What motives lie behind DEC's court action?

When giant takes small to court, there must be some complex reason behind it, writes John Kavanagh

WHEN the world's second biggest computer manufacturer takes a small London systems house to the High Court on software piracy allegations, there must be something in the wind.

Why should the giant Digital Equipment go to all that trouble to sort out a small amount of systems software licence income, especially when Darkcrest not only denies the charges but has also put in a counter-claim for £10 million?

The answer lies in the fact that in the last few years DEC has discovered that the applications systems market is big business. The company, which started as an engineering firm selling naked processors to other engineering firms, is now in the business systems market in a big way.

It still operates in its traditional way: through third parties. Two years ago it set up the authorised computer distributor scheme. There are 11 in the UK and they call themselves an elite, because DEC gives them its seal of approval only after close scrutiny of their finances and competence. They get normal discounts but also help with promotion and the right to use the DEC logo.

In addition there are about 300 official original equipment manufacturers in the UK, although fewer than 100 do any big business. DEC microcomputers are sold through 46 official dealers.

These schemes are fine for the companies covered by them — but "unofficial" systems houses are granted a licence to make only one copy of an operating system for use on only one processor. This enables them to build a system and sell it with the operating system to an end user, who cannot then sell it to someone else.

Systems houses outside the official schemes therefore cannot get an operating system from an authorised distributor and sell it to one of their own customers. DEC UK software services manager Peter Cook believes piracy of

the company's operating systems, compilers and utilities cost it £10 million in lost revenue in the UK last year.

"Previously we were losing our own money," he says. "But now we have to protect our official OEMs and distributors from competition from firms which can offer lower prices because they're not paying for systems software."

Cook believes there is only a small number of companies making a full living from DEC equip-

ment and pirated systems software. But he also believes nearly every software house in the country has been guilty at least once.

If persistent pirates are discovered DEC tries to negotiate a settlement. But it will go to court "if the person refuses to recognise the situation".

In the UK DEC has gone to court only with Darkcrest and Systime. Systime did not contest the case, made a "very substantial" payment and said it would keep a tighter watch on software licensing.

Darkcrest managing director Nick Brackenbury says his company has done nothing that has not been "standard DEC practice" for 10 years. He claims DEC has been tightening up on its software licensing conditions not to cut piracy but to hit the competition. He says the lawsuit really stems from the fact that Darkcrest beat DEC to an order from the Royal Gloucester Hospital.

Whatever the rights and wrongs of these claims and counterclaims, this last point does draw attention to a potential problem which both DEC and its authorised systems



BRACKENBURY (left, with two Darkcrest colleagues) ... "DEC has been tightening up."

houses would not do much business with general packages such as ledger packages unless they could add value.

Neville Cerfontyne, a director of Hoskyns, one of the authorised computer distributors, said afterwards: "They were telling us not to get into the software and services market which we're already in. They were saying we could not go for horizontal markets on which we've already spent millions. It was a blatant threat. DEC just wants to get into a big software market."

But DEC enters a grey area with other products such as ledger packages, which are also in the catalogue. Cook says users do not buy computers merely to handle ledgers, so systems houses can make money by adding office automation or tailoring systems for specific industries.

The systems houses are not so sure. The whole matter was aired publicly early this year at a Computing Services Association meeting. DEC OEM marketing manager Stuart Haughton said systems

selling "full solutions" is less than 10 years' time. And he expects specialist user applications packages to find their way into the catalogue before then.

Cerfontyne agrees. DEC now has a lot of competition in the hardware market, where product prices are falling, so it makes sense for the company to move into applications software, he says.

All the same, Cerfontyne welcomes this development. But not all DEC's official outlets — even some of the "elite", the 11 authorised distributors — would agree, according to Bernard Conlon, sales and marketing director at Commercial Microcomputer Software.

The company has joined the elite 11 only in the last month — and it is a typical example of the kind of specialist systems house DEC wants for the future. For as Conlon says: "We're very vertical: we cover insurance, air conditioning and plant hire systems."

The company has been around

for 10 years and a DEC official OEM for two. And Conlon's comments must be music to Cook's and Haughton's ears.

"Some of the authorised distributors certainly need to sort themselves out and get into some vertical markets," he says. "Too many have been DEC OEMs for a long time and they expect all sorts of favours. They expect the company to give them sales leads yet they're not adding any value to the systems themselves. They're naturally going to be worried about competition from DEC."

If Conlon is right, there could be quite a shake-out among even long-established DEC systems houses as the company competes more and more for end user business.

A shake-out could benefit the industry, for the firms that survive are likely to be the best ones. And as Cerfontyne says: "The market is growing very quickly and there's a shortage of programmers. There's room for all of us."

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Agenda

- 09.45 Registration
- 10.00 The multi-user environment
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- 10.15 The Software production cycle
Today's designer often faces more work in learning how to use development tools than producing his end product. This interactive presentation will overview the generation of a load module for a real application and demonstrate easy to use operating system utilities.
- 10.45 Hardware/Software Integration
The marrying together of hardware and software in real-time applications has traditionally been fraught with problems and can sometimes take 60% of total project time. An interactive presentation/demonstration shows how the Trigger Trace Analyser and other advanced integration tools can speed this stage of the development cycle and improve product quality.
- 11.15 Coffee/Tea
- 11.30 Logic Analysis Tools for the '80s
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- 1.00 Lunch

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You are a senior electronic engineer, programmer or software project manager, using microprocessors in a sophisticated application, working in a team of more than two/three engineers.

Seminar 2

2.00 Pascal programming tools for 16 bit microprocessor targets on the DEC VAX or the Tektronix multi-user system

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4.00 Future product strategies with an emphasis on software tools that concentrate on the conceptual stage of the design

4.10 Close

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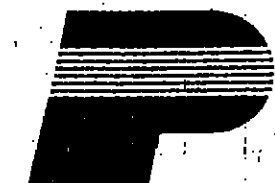
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CARLTON AMDAHL... Should be given equal credit with his father.

The Amdahls' company seems to be weathering production delays as it plans its assault on the established suppliers. Bob Djurdjevic reports

Trilogy tempts the investors to risk it

AMID the echoes of the battle of the giants, a relatively small American company is making a bid to become the world's third major supplier of advanced computer technology. While all eyes are peeled on the IBM versus Japan Inc. duel, Trilogy Ltd, of Cupertino, CA, could sneak past to become a major computer industry force.

At least that's what its investors are hoping, who have put up over \$250 million of investment capital so far. Among them are finance companies such as Bank of America and a Merrill Lynch partnership, insurance companies like Aetna and Canada's Crown Life, and computer companies like Cii-

Honeywell Bull of France, Sperry Corp (Univac) and Digital Equipment (DEC).

Considering another \$100 million is still needed, according to company founder and chairman Dr Gene Amdahl, Trilogy promises to be one of the most expensive start-ups in the computer industry.

By comparison, before Amdahl's first IBM-compatible venture, Amdahl Corp, went public in 1976, initial investors had put up about \$36 million. Adjusted for inflation, this would be about \$90 million in 1983 terms, or about one quarter of Trilogy's estimated seed capital requirements.

This is why Gene Amdahl's

second PCM venture couldn't wait to have its product completed before going public. On September 1, Trilogy made its bid for public funds through a Merrill Lynch Capital Market's preliminary offering. The company is offering six million new shares (about 15.8% of the total after the sale) to the public at \$12 to \$15 each.

If these shares are fully subscribed for, the proceeds will provide most of the additional financing which the company needs.

Trilogy plans to use the \$60 to \$70 million raised to fund remaining development costs. Another \$30 million will be allocated to capital equipment costs. About \$20 million will be used to fund the initial marketing and customer support services.

Pending the completion of the public offering, Trilogy has also secured a \$25 million bank loan, to cover the shortfall between the proceeds of the sale of its common stock and the planned expenditures.

If Trilogy's latest first customer shipment (FCS) date -- July 1985 -- is met, many investors will have had to wait over five years to find out if their investment has paid off.

This illustrates how much faith and nail-biting is built into every high-risk, large CPU venture, along with its chips and circuitry. But the rewards which successful ventures reap are also large.

For example, Amdahl Corp was able to report a profit in the first quarter after it started shipping its V6s, because of its "purchase only" strategy. Its seed investors also had to wait almost five years to see the first CPU shipped.

The waiting paid off handsomely, however, when the company went public. Now some of them hold Amdahl stock worth over 15 times their initial, multi-million dollar investment.

Trilogy's preliminary prospectus does not try to conceal the high level of risk involved. The Securities and Exchange Commission's disclosure requirements saw to that. Warnings about the risk

deciding to invest at all, are more complex.

Right from the start Gene Amdahl has had an ambitious target -- building the world's first IBM-compatible computer. The official start-up date was November 1980, but the odds were back to January of the same year.

This is when the two Amdahls, Gene and his son, Carlton, began to work with Magnuson Computers Inc., first discussed the possibility of creating a "big chip".

If they were able to create a large chip (in the order of 30 gates per chip), they would be able to reduce the number of microprocessors -- one of the reasons for failure of smaller chips.

The second benefit of a large chip "real estate" is that more functionalities can be built in it, further improving the yield. 50% of Trilogy's chip "real estate" is actually occupied by circuitry.

"It won't work," was the last back from most of the engineers in the Silicon Valley with whom Amdahls discussed the idea. It is no wonder most people were sceptical considering the 50,000 gate density was about 100 times greater than had been accomplished by that time.

It would take a 3000 sheet just to lay out the circuits manually, allowing Voin per gate. Of course, if it were done manually, Trilogy's project would never be completed.

Today the company is using IBM 3081-K, two Amdahl V6s and an AS/9080.

Gene Amdahl continued to court potential backers, undeterred by the scepticism of his colleagues. By November 1980, the new venture was off the ground, shored up by \$150 million worth seed capital. The insiders all control about 45% of the stock.

"Gene's name works well," one Amdahl Corp executive said recently. Indeed, there is little doubt that if someone other than Gene Amdahl had come up with the same idea, the funding for the project would be nearly impossible to secure.

There is little doubt that if someone other than Gene Amdahl had come up with the same idea, the funding for the project would be nearly impossible to secure

factors such as "unproven technology", "potential schedule delays", "additional financing needs, etc. are prominently displayed.

All of these factors were present to an even greater extent when Trilogy's original backers decided to invest money in the company. What makes the public offering more risky, however, is its price. While the average price per share paid since June 1983 was \$3.26, the public is being asked to pay four to five times that much.

There is no question that early investors faced bigger risk. As recently as this summer, however, Sperry Corporation and DEC purchased \$40 million and \$24 million worth of Trilogy stock at about \$8 a common share.

Of course, both companies are expected to be more than just the silent investors -- Sperry and DEC should be major buyers of Trilogy's chip technology.

In a public market trading, concerns about overpricing of any issues are easily resolved by supply and demand forces. But technological and computer market issues, which must be considered before

COMPANY PROFILE

Trilogy attracts investment in spite of the high risks

Continued from page 28

process. "Sometimes sparks would fly," said Ted White, describing the moments when the two designers would hold opposing views about a problem's solution. Nevertheless, those sparks spawned a design believed capable of delivering at least 30 mips of CPU performance by mid-1985.

This means 3.75 times more power than IBM's current 308X basic processor (3083-J; 7.9 mips), and about 2.7 times better performance than Hitachi's AS/9060 (11.2 mips).

Besides performance, another key to success as a large computer maker is being the low cost producer. A key to being a low cost producer is the yield in the manufacturing of chips.

Until now, IBM has been able to retain a leading position because of its huge economies of scale. It is believed that IBM's manufacturing cost is only 20% of a large CPU price, and that only in the early phases of its life.

Later, as the company starts to benefit from the manufacturing learning curve, the costs decline even further, perhaps down to 15%. That means just over \$600,000 for a CPU bringing in over \$4.1 million in revenue. And that means huge margins and just rewards for lengthy and expensive development processes.

High IBM margins is one of the reasons a company with higher relative manufacturing costs (eg Amdahl Corp) has stayed competitive with IBM, being contented with lower returns. Trilogy's technology, however, promises to put a relative upstart into the driver's seat as far as costs are concerned.

The reason is high yields. According to a study done by independent consultants, Trilogy can expect to achieve the accuracy of 4% to six defects per square centimeter.

Initially, 12 defects per square centimeter are expected -- this means at least a 20% yield, compared with most chip makers' current yields of 5% to 10%. Gene Amdahl said he actually expected yields to be "significantly greater than that".

It is clear, therefore, if Trilogy were to succeed in its goal of becoming a low cost producer as well as having the fastest computer, it would be unlikely to be beaten by anybody, even IBM.

"If one were to be able to improve the yields, nothing but goodness follows," an enthusiastic Ted White said.

To accomplish this, Trilogy had first to invent new CAD/CAM technology. By the end of the second year of development, one third of the company's development team was working on CAD/CAM projects.

Trilogy has recently also purchased an AS/9080 (20.2 mips) to run CAD/CAM applications on it, because it requires the largest available processor.

The company's total staff at the end of last year was 400 people. By June of this year, this had increased to 480 employees. Of this number, the engineering departments had 233 people and semiconductor operations 101, with the balance divided between facilities management, manufacturing and general administration and marketing functions.

The company currently plans to have about 800 employees by the end of June 1984.

Another important factor in the chips' production is the "clean room". In Trilogy's case, there are three-level processes, with the last one, where the chips are actually made, being off limit for people.

Technicians, dressed like NASA astronauts, are only allowed into the second, "semi-clean" chamber, from which they operate the chip-making equipment in the third "clean" room.

Meanwhile, ordinary mortals are not allowed past the first chamber, where floors glow in filtered

yellow light and sticky tapes remove dust particles from shoes.

An IBM spokesman maintained this was sufficient, because of the top-down filtration system in the clean rooms.

Trilogy's development process has not been a constant success. Originally scheduled for shipment in August 1984, by November 1982 the project had already slipped slightly. November 1984 was then the expected FCS date.

By this stage, the company had already spent \$110 million of the initial \$150 million, and was looking for another \$25 million of seed capital. Unexpected purchase of machines which had been planned as leases was cited as the reason.

Since that time, Trilogy has received over \$100 million of new investments, and is looking to spend another \$100 million by the end of the project.

"These things always take longer and cost more than one

Trilogy's advantage in being able to design an XA-type machine into a potentially costly retrofit -- to keep it compatible with IBM's new mainframes.

Some critics also point to the fact that this time, IBM and the marketplace are better able to anticipate Trilogy's competitive threat than when Amdahl was first designing his V6s. IBM is no longer a self-inflicted dozing giant, but an aggressive competitor, working hard on coming back against the threat of advanced Japanese technology.

This time, IBM is also taking Gene Amdahl seriously. The giant computer company has reportedly established two taskforces to study the potential impact of Trilogy's technology on its business.

As for the Japanese, Dr Amdahl himself speaks highly of their accomplishments in the computer industry. "Their technology is phenomenal. I hope that we will be able to compete with them, but it

Trilogy's position will not be nearly as good as it would have been if the company had been able to stick to its original timetable. Any more slippage will have a further negative effect

hopes," said Dr Amdahl recently.

By March this year, FCS date was delayed some more, to February 1985. According to Amdahl, the company had had problems with its top semiconductor man. The now departed head of the semiconductor division was putting too much emphasis on basic research, and not enough on development and production.

Trilogy replaced him with Doug Peltzer, previously head of Fairchild's bipolar technology.

"There is going to be a delay in the CAD/CAM phase, but not as much as four months," said Dr Amdahl. This work was originally scheduled to start pilot production on March 22 this year.

Now it appears the delay will be longer than expected, with the latest estimated FCS date slipping to July 1985. The costs of such delays are significant.

According to Amdahl, the four-month delay from November 1984 to February 1985 would cost an additional \$15 million. But a year's delay in FCS date will have a much more profound marketing significance.

Assuming IBM's Sierra processors are announced in the first quarter of 1984, with FCS date in the third quarter the same year, Trilogy's original timetable would have allowed it to attack IBM's 14-16 mips basic processor with its 30+ mips giant in the same timeframe.

There isn't much doubt what the outcome would have been. But by July 1985, IBM will probably be shipping Sierra in volume, and Hitachi's 20-25 mips base engine will also probably be taking part in the fun.

Trilogy's prospectus says it expects IBM's new system to be delivered in 1985. Some other sources concur, citing as the reason IBM's alleged performance problems with the Sierra mainframes.

Trilogy's prospectus also warns: "If this new IBM computer is not compatible with, or has significantly more than twice the processing power of the currently available 308X line of computers, or is delivered before 1985, the commercial success of the company (Trilogy) could be severely affected."

This means Trilogy's position will not be nearly as good as it would have been if the company had been able to stick to its original timetable. Any additional slippage will have a further negative effect on the magnitude of its success.

By 1987, for example, there will be not only a new generation of IBM processors, but also an XA-type machine. This would turn

would have to be a sustained effort to win the technological war.

Japanese companies are not driven as much as IBM is by the quarterly shareholders' reports.

Because of the smaller number of owners, compared with IBM's 725,000 shareholders or more, Japanese companies are able to react more swiftly.

There is also a greater entrepreneurial feeling among the company executives. And it is entrepreneurs, like Gene Amdahl, who have been giving the world new technologies -- not the big company executives.

This means that Trilogy must watch IBM as long as it intends to compete in its galaxy as a plug-compatible vendor. But the company must look out for the Japanese when it comes to technological competition.

The latest deals which Trilogy has made for the sale of its technology, to Sperry and DEC, two prominent American computer makers, are a sign the company knows about this danger.

"We expect to make deals of this kind with just about anybody who needs this type of technology. Except, of course, IBM and the Japanese," said Dr Amdahl.

The semiconductor industry, however, is very volatile, frequently going from feast to famine. With computer companies as customers, chip-makers are subjected to constant over-buying and under-stocking of computer component inventories, as companies try, but rarely succeed, to anticipate changes in economic cycles.

The term "chip foundry" has been used recently to describe a role Trilogy may play in the future. The words may become prophetic if DEC exercises its option to require Trilogy "at any time prior to December 31 1984 to commence the establishment of a new semiconductor design and manufacturing facility in California". Under the agreement, DEC would get up to 60% of the new plant's output.

The "chip foundry" concept will clearly be an important business element in Trilogy's plan. It represents a leverage that allows for the exploitation of Trilogy's technology beyond the means of a single computer company.

The danger inherent in this approach is that the company's resources may be spread too thinly between the computer and the chip design.

Trilogy's technology, though, may be able to perform an important integration role in the American computer industry as a nucleus of the "third technological camp".



GENE AMDAHL... Expects yield to be "significantly greater" than 20%.

as an American alternative to the multi-national IBM and the Japanese vendors.

American computer companies are clearly worried about the inroads the Japanese are making. Several private R & D joint ventures have recently been formed.

These efforts, however, are beginning to resemble the style of development and operation which works for the Japanese.

Whether this kind of approach is suited to the Western mentality, which is more arduous with individual rather than collective cre-

ativity, is doubtful. It is uncertain, therefore, that these joint ventures will produce the desired technological results.

Trilogy's approach, with founding entrepreneurs helping guide the ship along the way, has a better strategic chance of success.

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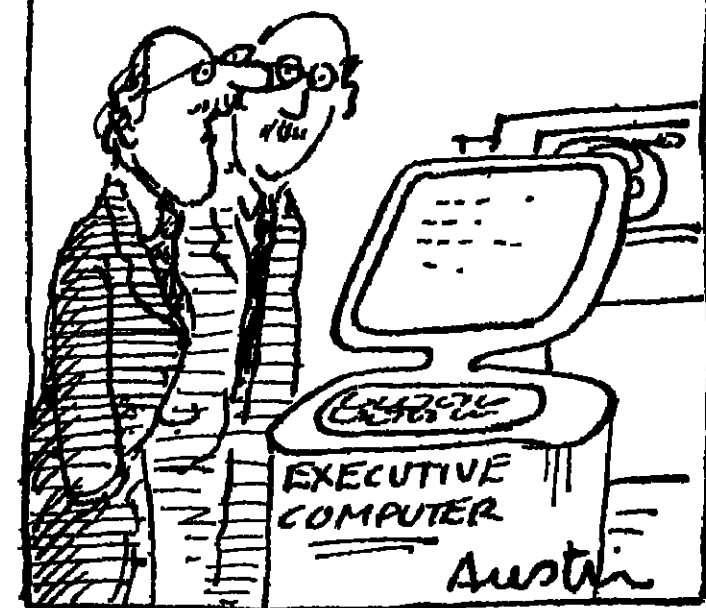
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BOOKS

IT SIMPLY DELEGATES
EVERYTHING TO MY P.A.'S
MICROHow best to introduce
technology to offices

New Office Technology. H. Otway and M. Peltu. Frances Pinter, London. £15.

FOR those sceptics dubious about the relevance of studies generated by the European Commission in Brussels, this book comes as a refreshingly sharp rejoinder.

Its editors aim to supply clear, practical and jargon-free advice to those responsible for implementing information technology in the office. To do this, they draw on the experience of the European Commission Inis Project (Inter-Institutional Integrated Services Information System), which was set up two years ago to establish and implement compatible office technology and communications

into European Community administrative institutions. There are 13 integrated chapters, each written by an international specialist, although weighted towards academics and social scientists in particular.

The Inis programme is currently moving out of its planning phase, and many of the findings are distilled into this book, which examines implications, change and ergonomic requirements.

In summary it argues a socio-technical approach and the main message is the importance of human and organisational factors when new technology is introduced.

The book succeeds in its aim. It is clear and readable and covers

most relevant topics. There are however, some lapses into heavy academic jargon in places, and the ergonomic discussions only just avoid slipping into tedious detail on distances and measurements.

The most original part of the book is to highlight the importance of software design on user satisfaction. It emphasises that if the software in interactive dialogues is not flexible, there may be decreased job satisfaction with resulting decreased productivity.

For example, when the user is gathering information verbally for keying into the computer, stress is caused if the sequences demanded by the software are too rigid. As users become more proficient in handling the system, they should

be able to use different levels of software - consequently the book calls on software designers to provide flexibility.

Another cause of frustration is getting the system response time right. Long delays infuriate users, but the book points out that response times that are too rapid can also cause stress.

The book deserves to be more than just another academic textbook and industrial managers should read it in the planning stages of introducing new technology, particularly as its principles are to be put into practice in the implementation stages of the Inis project.

John Riley

Catalogue for micro users

Microcomputer Programs in Print. Owen C. Schultz. Postroad Press, Virginia.

A CATALOGUE of programs commercially available is not the most exciting reading; but likely to be a boon to anyone who makes extensive use of a microcomputer. Microcomputer Programs in Print, collated and edited by Owen C. Schultz, is such a book.

Two hundred pages detail the software available for more than 150 best-selling micros. A breadth of 280 subjects, from speech synthesizers through tax and professional business applications to engineering, are combined to

make a total of 2,700 individual items.

The main virtue of the book is that any of these can be located, either computer model or subject, by using the cleverly constructed keyed index. Once found, details of the producer, names and addresses of main suppliers and prices are given.

Included too are the necessary technical details: the amount of memory required, the medium in which the program is available, any peripheral devices necessary for operation, the program language and the operating system.

Throughout, the data is ordered

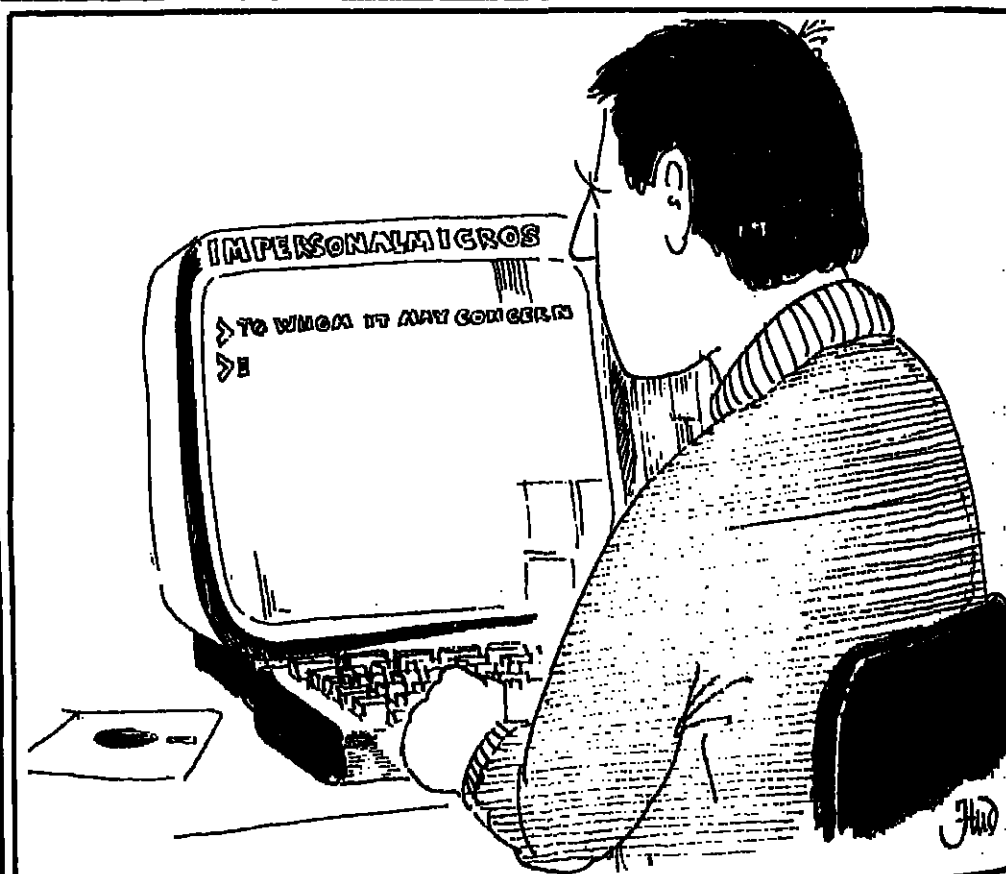
and clearly printed. Once mastered, the index system is the fastest means of successfully finding information.

Regrettably, all suppliers listed are American-based. So extra costs and inconvenience may nullify discounts.

The book is not for the casual reader but for anyone who intends to install a micro system or extend the scope of a current system.

Whether such a book can be of use to you, find out for yourself by taking advantage of the money-back guarantee.

Patrick McDermott



Catering for the subsidiary course

Pascal Programming: a beginner's guide to computers and programming. Chris Hawksley. Cambridge University Press. £12.50.

IN HIS preface, Chris Hawksley, a university lecturer, explains that he was surprised to find that of the many books available on computer programming, none was to be found that satisfied the students on his own courses.

He felt that as he was teaching a subsidiary course in computing, the existing books assumed a level of previous knowledge and experience that his students did not have. So he resolved to write one that catered for people studying computer programming as a subsidiary subject, yet covering the subject in depth.

I was surprised at his claim, as I have come across some very good basic text books. However,

Hawksley's book is well written and achieves his intentions.

My feeling at coming to the end of Part 1 was that I could try my hand at programming in Pascal with a great deal of confidence.

As he assumes no previous acquaintance with computers, he starts with a lucid explanation of the concepts behind programming languages. The reader is effortlessly and painlessly led from symbols and representation through data types and algorithms into the hitherto hidden mysteries of Pascal programming.

This is part of the attraction of the book - everything flows smoothly from stage to stage.

Part 2 develops the practical aspects of designing and writing long programs - the examples up to this point are fairly elementary. The going does become heavier here, but then it is a textbook, and not designed for readers covering

the equivalent of several weeks' study in a few days.

Also, as it is intended to supplement a course of lectures, it is designed as a teach-yourself manual, although it seems adequate for that purpose.

The examples throughout provide clear explanations of all the procedures, and each chapter ends with a series of exercises. As it is designed as a teach-yourself manual, some of the more advanced procedures are not covered, as the author explains in the preface.

It is perhaps a pity that no list of suggested further reading is provided. Hawksley's suggestions could be worth taking up.

However, this is a minor complaint about what is all in all a well-written and, most importantly, a readable book.

David Albany

Guide to good programming too academic

Guide to Good Programming Practice. Brian Meek, Patricia Heath and Nick Rushby. Ellis Horwood.

THE Guide to Good Programming Practice is written mainly by university people - and seems to be aimed mainly at university people.

This is a pity, for there is much food for thought here for experienced programmers, as well as sound advice for beginners. But the commercial applications programmer has to put up with

examples written for mathematicians and a concentration on Fortran and Algol.

An informative section on structured programming looks in depth at two programs, written in Algol and Fortran. One integrates a system of differential equations using the Runge-Kutta method; the other forms a generalised inverse of a positive semi-definite symmetric matrix.

Hands up all Cobol ledger system programmers to whom such ideas mean anything.

The book consists of 170 pages of papers by the editors and several others. The chapter on program writing has a sensible section on choosing the right language for the job. And the other chapters on structured programming, testing and improving run-time performance by optimising program code.

This is the second edition of a book which has proved popular since it was first published in 1980.

John Kavanagh

PRODUCTS

Instant colour
for personal
computers

A LOW-COST interactive film recorder producing 35mm slides and instant photographs of personal computer graphics is introduced by Polaroid (UK).

Called Polaroid Palette computer image recorder, the system is designed for use with personal and small business computers to make presentation-quality colour or black-and-white graphics hard copy on new Polaroid 35mm Auto-process transparency films and Polaroid ER 3 1/4 x 4 1/4 inch instant print film.

The user-friendly system connects easily to the computer by means of a black-and-white video line and an RS232C communication line. A compact, desk-top peripheral, Palette measures 16 x 8 x 6 inches and weighs 12 pounds.

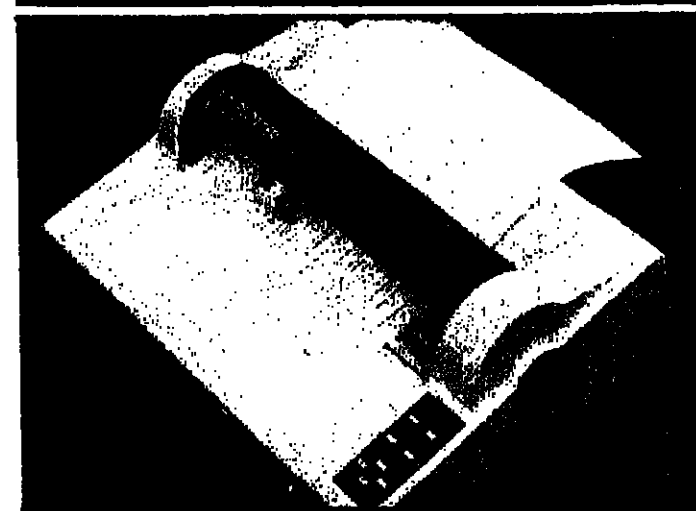
Palette can be used with the

IBM Personal Computer, as well as Apple II Plus and Apple IIe computers. The image recorder can be used with several existing personal computer graphics software packages, and is supplied with diskette software.

Containing a flat-faced, medium-resolution monochrome video screen with a tri-colour filter wheel, Palette allows even monochrome-display computers with graphics capability to produce colour hard copy for presentation, display, record-keeping or working copies.

The program diskette supplied with the system permits selection from a multi-coloured table for changing or adding colours on the film.

Polaroid (UK) (CW), Ashley Road, St Albans, Herts AL1 5PR. Tel: (0727) 59191.



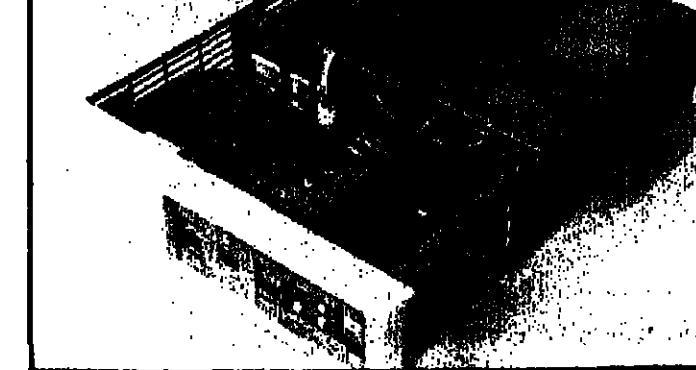
The B1000 offers four-colour plotting for £740.

Four-colour plotter

A FOUR-COLOUR plotter for microcomputers has been introduced to the UK by Encotel Systems. The company says that at a starting price of £740 the BMC B1000 is the cheapest plotter on the market with such a range of facilities.

It can be used with most microcomputers with a standard RS232C or Centronics interface, can be driven from any language, including Basic, and controlled from word processors.

Encotel Systems (CW), 7 Imperial Way, Croydon Airport Industrial Estate, Croydon, Surrey CR0 4RR. Tel: 01-680 6040.



The Micro PDP-11 comes as a rack-mounted or desk-top system.

Micro PDP-11 launch

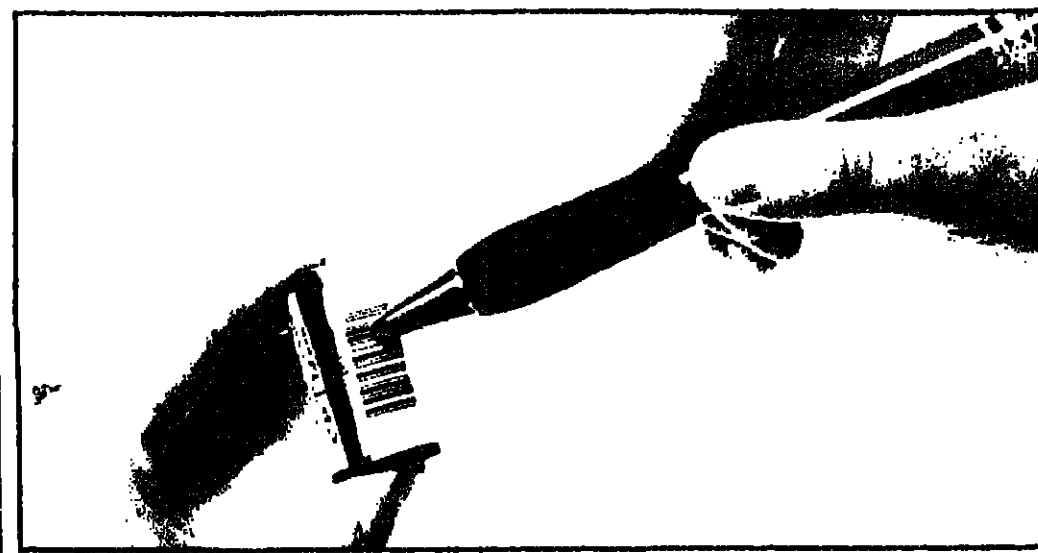
DIGITAL Equipment's Micro PDP-11 is now available from authorised distributor Rapid Recall. The machine has the PDP-11/23 Plus processor, which can support four megabytes of memory. A 10-megabyte Winchester disc and 800K of floppy disc storage can be provided as standard.

The system features an LSI-11 bus backplane with a 22-bit address bus. It can take up to 10 dual-expansion boards. Rapid Recall can supply a range of boards for commercial and industrial applications.

The machine can be supplied in rack-mounted or table-top form. It fits in a cabinet measuring 62.5cm x 13.1 x 68.58.

Rapid Recall can provide it as hardware only or with a general-purpose licence and 12-month warranty. The company says the system will make a considerable impact on the small computer market. It offers a relatively simple upgrade path to bigger DEC processors.

Rapid Recall (CW), Rapid House, Denmark Street, High Wycombe HP11 2ER. Tel: (0494) 26271.



The new Mark IX barcode pen from Skan-A-Matic.

Pen can read dot matrix code

A NEW visible-red-LSD barcode pen, the Mark IX, which can read barcodes printed by ordinary dot matrix printers, is being manufactured at Skan-A-Matic's new UK facility at Brighton. Designed to read any barcode with a minimum bar width of .007", these are precise photoelectric devices with a depth of field which allows them to scan through clear protective coatings while, at the same time,

compensating for "pen bounce". Each pen contains a pre-amplifier which provides a normalised voltage output to provide interchangeability in the field without individual adjustment. This output - 250mV + 10mV on 90% white reflective surfaces and less than 10mV on black surfaces or in free air - is suitable for OEMs or users designing their own equipment as well as being compatible

with Skan-A-Matic conditioning and decoding circuitry.

The pens, which are roughly the size of a large ballpoint pen, are balanced for optimum manual use. The optical design allows accurate scanning even when tilted as much as 35°C away from vertical, says Skan-A-Matic.

Skan-A-Matic (CW), 40-41 Castle Street, Brighton, BN1 2HD. Tel: (0273) 21646.

TV turns
out hard
copies

MITSUBISHI is to market a TV set that can turn images on the screen into hard copies.

It will market domestically a printer-incorporated TV set in late October. The TV is a 21-inch type and will cost 258,000 yen in Japan.

In early December the company will also put on the market a TV printer than can be plugged into conventional TVs. The printer, priced at 69,800 yen, can also be connected to VCRs, video cameras and personal computers.

The image on the screen is converted into digital information, memorised in LSI (large scale integrated) circuits, controlled by a microcomputer and quietly printed on thermo-sensitive paper in monochrome images of 280 dots by 234 dots every 15 seconds.

The company expects the new product to be put to a variety of uses in homes and offices.

Mitsubishi Electric Corporation (CW), 2-3 Marunouchi 2-chome, Chiyoda, Tokyo 100. Tel: Tokyo (218) 2171.

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Pragmatic Programmer (Banking software/micro computers)

Central London

£10,000

In only 18 months Computacenter has reached the forefront of its field as a specialist in the development of microcomputer based banking software. The company's impressive client base incorporates a range of 'blue chip' investment and Merchant Banks.

To continue their policy of expansion, Computacenter is seeking a pragmatic person who can demonstrate experience in the following areas:

- * 18 months + programming
- * Micro computer software development
- * Excellent communications skills

Experience in Business Basic and/or Pascal with some exposure to Banking or Financial applications would be an advantage.

The successful candidate will initially be involved in the development of Banking software on an Apple 3 microcomputer with further responsibilities for its implementation onto IBM and Digital machines.

The opportunities for career progression are tremendous and consideration will be given to the candidate who would be interested in a future sales career.

Find out more - phone Knight on 01-491 4706 quoting ref GK605.

Computacenter

IBM System 34 Prog and Analyst/Programmer

Nottingham

£10,000 pa

Bell Fruit (UK) Limited is a well established and major force within the leisure industry. The company is installing a newly developed distributed processing network of System 34's to support information processing for its locations throughout the UK.

The data processing department consists of a small development team who are responsible for an effective and efficient service.

To continue its policy of expansion the company needs additional professional people who can demonstrate the following qualities:

- * A sound knowledge of IBM GSD systems
- * At least two years programming experience, preferably in RPG II

*** Good communications skills**
You will be offered a competitive salary in line with your abilities and a real opportunity for career progression.
This is an excellent invitation to join a successful company in an attractive working location.
Find out more - contact Knight on 01-491 4706 quoting ref GK606.

BELL-FRUIT (U.K.) LIMITED

Senior Programmer

Central London

£11,500

Cambridge Data Limited specialises in the supply of turnkey systems for the clothing and allied industries.

Their product range incorporates a wide variety of commercial applications eg Factory Production Control, Accounts, Stock Control and Order Processing, for CP/M based multi-user networks using a wide range of micro computers.

Cambridge Data Limited is now seeking an experienced professional to develop his/her career with a growing company.

Candidates will have experience in the following areas:

- * 2-4 years with an independent Software House

*** Micro computer systems in a commercial context**
*** All stages of installing small business systems including analysis, programming and support**

The successful applicant will be responsible for installing systems on customer sites. The job involves a considerable amount of programming and analysis.

Find out more - phone Knight on 01-491 4706 quoting ref YY190.

CAMBRIDGE DATA LTD

Analyst Programmer (Database-Prime Info)

City

£11,500-£14,500+benefits

Our client is a British Oil Exploration, Production and Trading organisation with international interests. The London computer services department houses a Prime supporting 20 terminals and a range of technical and financial applications. A second Prime will be installed shortly.

They currently require an Analyst/Programmer with a good educational background and sufficient experience to take responsibility for database projects, liaising directly with users.

Opportunities will also arise to work in systems administration, telecommunications and other technical applications.

Ideally your experience will include some of the following skills:

- * Database applications
- * INFO
- * Fortran
- * Technical applications

You will be offered a salary relating to your experience, and in addition some of the benefits include free pension scheme, health insurance scheme and kitchen vouchers.

For further information and an early appointment for interview please Knight on 01-491 4706 quoting ref YY124.

Knight

Confidential Ref

Programmer/Analyst

Essex

£10,000

Pitney Bowes PLC is a company renowned for the excellence of its business products and is a market leader in Business Systems and Mailing Equipment.

Following the recent transition from ICL to Univac hardware their computer centre is currently engaged in the re-development of a number of commercial applications.

The Programmer/Analyst will be responsible for the writing of specifications for Cobol programs and should be able to demonstrate experience in two of the following areas:

- * Minimum 2 years Cobol
- * Database Knowledge
- * Univac 1100

The successful candidate will be offered a competitive salary and in addition a wide range of company benefits.
Find out more - Contact Knight on 01-491 4706 quoting ref YY192.

Pitney Bowes

PDP 11 Programmers

City

to £11,000 pa

Our client is one of the UK's most successful Systems Houses, supplying high profile turnkey business systems to a broad spectrum of industry.

They are currently seeking two highly motivated Programmers to contribute to the development of a prestigious project incorporating Financial and Payroll applications.

Candidates should have experience in the following disciplines:

- * Minimum 2 years Basic + or +2
- * RSTS/E
- * Commercial applications

Successful candidates will be rewarded with a highly competitive salary, depending on qualifications and experience, coupled to a real opportunity for career progression with a leading and well established computer service company.

Knight

Confidential Ref

We are Gresham Life, part of the worldwide AMEV Group of Companies, now undertaking a major automation project through the development of a Dictionary controlled Information Management System on a new IBM 4341.

Therefore we are urgently seeking a number of experienced DP professionals to join the existing development groups within our Information Services Department at our South Coast Head Office.

We are able to offer attractive remuneration packages which include highly competitive salaries, mortgage subsidy, non-contributory pension scheme, free life assurance and permanent health insurance plus relocation assistance, where appropriate. If the opportunity to develop and advance your career, in this pleasant south coast resort appeals to you, please write in confidence or telephone with brief career details to:

With confidence
Personnel Manager, Gresham Life Assurance, 2-6 Prince of Wales Road, Westbourne, Bournemouth BH4 8SD. Telephone (0202) 767666

Operations Manager

Extend the life span of your application development, including the development of new systems. A minimum of 5 years experience in management experience in an IBM environment using VM, I/O, VME and QJCL is required.

Dictionary Controller

A good administrator with experience of maintaining automated and manual libraries in a controlled Data Processing environment is required to fill this critical role within the Systems Development group. Experience of using DATAMANAGER, PARVALI and PARALC would be an advantage.

Systems Designers

Analysts or programmers with 2-4 years experience in an IBM 370 or 4300 environment, using COBOL, are required to fill several positions within the Systems Development group. Successful applicants are likely to be aged between 25 and 35 and willing to become involved in all aspects of the DP function.

Senior Systems Professionals

A minimum of 5 years systems experience in the Financial sector with particular reference to conventional and/or Unit Linked Life Assurance is required for these challenging roles within the Business Systems and Applications Development teams. Proven project management experience will be a distinct advantage.



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Systems Design & Development Relational Database Products

Relational database technology is one of the major elements in ICL's Networked Product Line Strategy. This is particularly so in the area of Decision Support Systems where users, often business professionals with little or no data processing experience, are accessing and analysing data in an unpredictable or ad-hoc manner.

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Applicants should have experience and skills in one or more of the following areas:

- * Compiler techniques
- * COBOL programming
- * PASCAL
- * Database technology (CODASYL or relational)
- * VME
- * Data dictionary technology
- * Validation, Integration and support
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In addition to salaries up to the levels quoted we can offer excellent benefits, challenging project work and outstanding career development prospects in a key area of ICL's strategy for success.

Please write with full cv to Charlie Reames, ICL, Kings House, Kings Road, Reading, Berks. Tel: Reading (0734) 586211.

We should be talking to each other.

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Recent expansion has led to the following vacancies in Sales Support.

Sales Support Manager c.£15,000 pa + Car

The Sales Support Manager reports directly to the UK Sales Manager and is based in prestigious central London office accommodation. The current vacancy has arisen through internal promotion. Candidates should be qualified to Degree level in a technical discipline relevant to the support of a sophisticated range of microcomputers and visual display terminals. They will need a thorough working knowledge of microprocessor technology, which should include Z80A and Motorola 68000 processors; also operating systems such as CP/M Plus and Unix. Other microcomputer operating system experience would be a distinct advantage.

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Sales Support Engineers £11,000 pa + Car

Reporting directly to the Sales Support Manager as an integral part of regional sales teams based in London, Nottingham and Melskham. Candidates should have minimum qualifications to HNC standard in a technical support of a professional sales team.

In all cases candidates are sought with the ability to liaise closely with customers and should be both positive and self motivating in their outlook.

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For a detailed job description and application form, please contact Jane Thompson.

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Exciting job opportunities in Leicester for Data/Database and Communications Specialists

Emgas has embarked upon a major development programme, and has plans for a large scale redevelopment of its current business systems. These developments employ the latest advances in communications and data management facilities. Hardware includes 4 Sperry 1100 series mainframe computers with a communications network of 250 terminals currently being expanded to more than 600. Vacancies are for:

Data Analyst

up to £12,144

This post offers a challenging career in the increasingly important area of data management. The position will involve data analysis/database design on new developments and the maintenance of existing databases, including the administration of the Sperry Mapper system. Candidates must be self motivated and be able to communicate effectively at all levels within the organisation. It would be an advantage to have a working knowledge of CodaSys database facilities and data analysis techniques. [Ref. No. 21028]

Systems Programmer/Senior Systems Programmer

up to £12,144

The person we seek is an experienced and self motivated systems programmer with a proven track record in communications software support or development. Knowledge of one or more of the following would be an advantage:-

- line protocol handlers
- terminal software
- communications architectures (ISO/OSI, DCA, SNA)

[Ref. No. 21029]

In return we offer rewarding and satisfying work in a friendly environment. Benefits for both posts are those normally associated with a large company and include relocation assistance where appropriate.

For further details please telephone Tom Coxon on 0533 551111 Ext. 2332. Detailed written applications to Industrial Relations Manager, Emgas, De Montfort Street, Leicester, quoting the appropriate reference number on both envelope and letter.

These posts are open to both men and women.

Closing date: 21st October 1983.

EAST MIDLANDS GAS

ANALYSTS & PROGRAMMERS

MVS TRAINING

CITY to £13,000 pa

Multi-national organisation based in the City is strengthening its technical side. This has necessitated the need to employ good DOS/VSE SYSTEMS PROGRAMMERS. Current hardware consists of IBM 4341's, upgrading soon to IBM 3083's, which will utilise the MVS operating system, thus creating a perfect opportunity for successful candidates to migrate to MVS. This is a fast growing department offering excellent staff benefits. Ref: S1282.

TANDEM/VAX TRAINING

LONDON & COUNTRIES to £14,000

Several prestigious companies in both Central London and the adjoining counties need experienced COBOL Analyst/Programmers. Where necessary people will be trained on VAX or TANDEM equipment. Salaries vary according to experience. In some cases benefits will include a CAR. These clients include manufacturers, software houses and civil service departments. Applicants must have competent oral & written skills. All applications must be accompanied by a CV. Ref: 1085

CICS TRAINING

CITY to £10,000

A City-based International Bank housing 2 IBM 4341's under DOS/VSE(C), with CICS and DL/1, is currently recruiting a number of PROGRAMMERS, to join their MAJOR ON-LINE COMMERCIAL LOANS 11 AM. Frequent interviews with around 2 years' experience of COBOL and preferably some exposure to CICS and/or DL/1, who would welcome further training in these areas should apply now. Company benefits and scope for career advancement are excellent. Ref: A1253.

ANALYST/PROGS

CITY c.£12,500

This well known INTERNATIONAL BANK located in the city are currently recruiting BASIC Analyst/Progs. Candidates should have a minimum of 2 years programming experience, and preference will be given to people with a knowledge of PDP hardware. Benefits include subsidised mortgage, season ticket loan, pension etc. TRAINING on VAX will be given. Opportunities are also available for Senior A/P's to move into project management. Ref: F1135

ANALYST/PROGS

SW LONDON to £13,000 pa

This MANUFACTURING giant situated in South West London would like to recruit good IBM ANALYST/PROGRAMMERS, with at least 2 years programming in COBOL, and some ANALYSIS experience. They house IBM 4341 computers with CICS on-line and DL/1 Database. The successful candidates will have the opportunity to become increasingly involved in SYSTEMS ANALYSIS, DESIGN and USER-LIAISON, and those with the potential will progress into management. Ref: S1311.

PROGRAMMERS

BERKS/SURREY c.£12,000

Companies in the above areas have engaged our services to recruit experienced DEC programmers. Candidates should have commercial experience in FORTRAN, MACRO or BASIC+. This is an ideal opportunity for those with experience of real-time systems to advance their careers. EUROPEAN travel will be necessary in some cases. Ideal candidates should have knowledge of RSX11 or RTL11 but training will be provided. Ref: F1247.

PL1 PROGRAMMERS

CITY £8-12,000

One of the largest and most successful International Insurance Broking Groups based in the City are recruiting a number of PL1 programmers. Interesting on-line applications await you in a sophisticated environment consisting of an IBM 4341, Series 1 Micros and recently installed WANG VS equipment. Candidates with a good standard of education and between 2-5 years experience of PL1 programming, should apply now for an early interview. Ref: A1310.

CICS TRAINING

CITY £8,500-£11,000 pa

Our client is a prestigious city-based FINANCIAL institution embarking upon a major expansion programme. They now need to recruit 2 to 3 IBM COBOL PROGRAMMERS, with 12 months to 3 years experience. The company's configuration consists of 2 IBM 4341 Mainframes, utilising DOS/VSE operating system. Knowledge of CICS on-line programming would be useful, but training will be provided where necessary. Excellent staff benefits are on offer. Ref: S1033.

CICS PROGRAMMERS

SURREY £10,000 + pa

Large International travel organisation have positions available for programmers with at least 2 years programming in COBOL on IBM hardware using CICS. Their computer is an IBM 4331 with a large on-line network of terminals, both remote and local. Wide range of interesting development work available covering various systems. Excellent salary and benefits on offer, generous WORLD-WIDE TRAVEL CONCESSIONS, free Life Assurance and subsidised staff restaurant. Ref: S1244.

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SNR ANALYST/PROGS

ESSEX to £13,500

Our Client, one of Britain's largest Investment Services Organisations are currently recruiting a Senior Analyst/Programmer to become involved in the development of a new Insurance and Pension Scheme. The current configuration is Iwin IBM 4341's under DOS/VSE with COBOL, CICS and VSAM. Experienced Analyst/Programmers, preferably with some exposure to CICS, who would welcome the opportunity to further their careers in a progressive environment, should call now. Ref: A1312.

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SBS RECRUITMENT

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IBM Programmer

City Up to £12K

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Electronics and Software Engineers

Herts, Beds, Surrey £10-£13K

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Programmers/Team Leaders

South Coast £8-£16K

Our Systems House client is expanding fast and excellent career prospects are available to programmers with two to seven years' experience of defence and allied work. CORAL, PASCAL or FORTRAN skills are needed. New offices are being established in Southampton and staff will work there and on nearby client sites. Ref: 0809/E

Viewdata Systems Micro Programmers

Herts + Overseas possibilities £9K+

Our client is developing viewdata systems and communications links for these and other applications using X25 protocols. Knowledge of X25 and M68000 assembler advantageous but other relevant experience will be considered. Graduates with two years' programming experience preferred. Ref: 0809/F

Software Development

Surrey £10,000-£12,000

This is a specialised role involving the design, development and implementation of software for diagnostic and test purposes. Candidates must be familiar with DEC PDP 11/RSX 11 and ideally have had experience of working at hardware interface level. Knowledge of PASCAL or FORTRAN would be an added advantage. Ref: 0809/G

Programmers (Comms. Software)

Middx £10,000-£14,000

This systems house specialises in transaction processing technology and has designed and installed a number of sophisticated switched networks, mainly in the financial sector. Vacancies now exist for high-calibre programmers with sound COBOL, ASSEMBLER or PASCAL experience and full training will be provided on TANDEM COBOL/TAL. Ref: 0809/H

Real-Time Expertise

Surrey Border £9,000-£17,000

High technology systems house needs designers and consultants to be involved in the development and installation of defence, information and industrial real-time applications. Familiarity with Assembler or Real-Time/mathematical languages is desirable. Substantial remuneration package and relocation offered. Ref: 0809/I

Analyst/Programmers

London Up to £10,000

A minimum of 12 months' on-line programming experience is required for two bright and enthusiastic programmers to join a small dynamic team involved in the development and support of leasing systems for the UK and European markets. First-class remuneration package and career prospects. Ref: 0809/J

Communications Programmers

London £10,500-£13,000

A very prestigious and profitable organisation is currently replacing its communications network. As a result opportunities of rare scope exist for programmers with at least 12 months' experience of PL/M or PASCAL/RTL 2 to join small highly skilled teams developing new communications facilities and databases. Ref: 0809/L

Scientific Consultancy

London Up to £15,000

A leading UK consultancy requires additional high quality professional staff at varying levels. Candidates must be graduates and have experience in one of the following areas: Digital Electronics, Simulator Design, Navigation Systems, Avionics or Acoustics. Excellent career prospects in a growing organisation. Ref: 0809/M

Mathematicians

North London £13K

Mathematicians are needed with experience of target acquisition, trajectory modelling and simulation to join teams working on the early stages of a major new weapon system project. Good degree essential. Relocation assistance will be provided if needed for candidates to join this company which offers outstanding career prospects. Ref: 0809/N

Analyst Programmers

London/Overseas Up to £12.5K

Rapidly expanding systems house with worldwide client base needs Hewlett Packard experts. Specification and implementation can be overseas but development in London on the in-house machine. Five years' experience, the last two on HP 3000, using IMAGE, QUICK, QUIZ etc is needed for these positions. Ref: 0809/P

Financial Systems Business Manager

A key appointment in a City-based operation

London
£25,000

CAP Financial is a prestigious systems house specialising in systems for the financial community and currently enjoying a steep growth curve.

They now need a seasoned professional to join the management team which manages 120 people and a projected £4 million turnover.

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The successful candidate will combine extensive experience in a similar City-based computer operation with outstanding marketing flair.

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This is a key appointment within an expanding, profitable and successful CAP group.

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Please apply in confidence with full details to:

Tony Knott, UK Personnel Manager,
CAP (UK) LIMITED
20-26 Lamb Conduit Street, London WC1N 3LP
Tel: 01-404 0911.

CAP



Isobel Bruce or David Fletcher 01-405 1006 or write quoting advertisement reference number, 16 Red Lion Square London WC1R 4QS

ANALYST/ PROGRAMMERS

DEESIDE (NORTH WALES)

We are the UK's major manufacturer of Optical Fibres to telecommunications standards: an Anglo-American partnership operating in ultra-modern, purpose-built premises. Our computer section is already expanding and we are now looking for a sound and enthusiastic man or woman to join us.

Initially you would form an interface with the process control section and would be involved in the development and maintenance of production systems, including material requirements planning, work in progress tracking and production reporting.

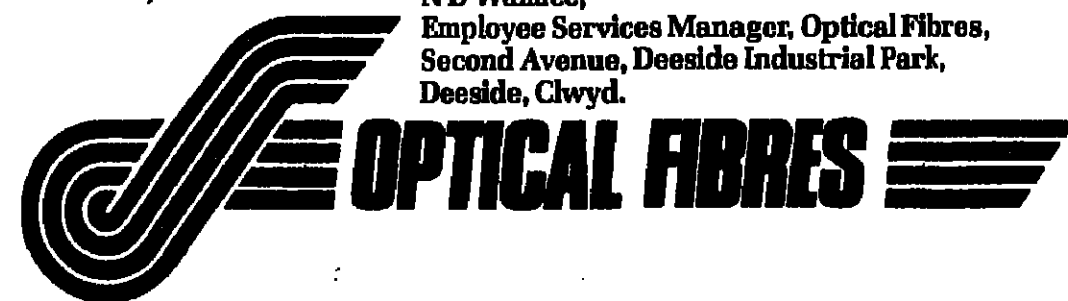
You must be a graduate in a science discipline who has at least four years experience, a programming background with analytical skills, and should have a versatile approach with the ability to communicate fluently with users. A knowledge of VAX VMS, Fortran, one other high level language and a commercial background would be a distinct advantage, but not essential.

The benefits package reflects our progressive company policy and includes competitive salary, 25 days holiday per year, private medical insurance, and an attractive relocation package (in appropriate cases) which includes generous help with legal, estate agent and removal fees, together with a disturbance allowance of 15% of salary.

We are located on the North Wales/Cheshire border within easy access of the country, seaside, and the historic city of Chester, with good housing and schools locally.

If you are keen to develop your career in a stimulating environment at the forefront of technology then write with comprehensive career and personal details to:

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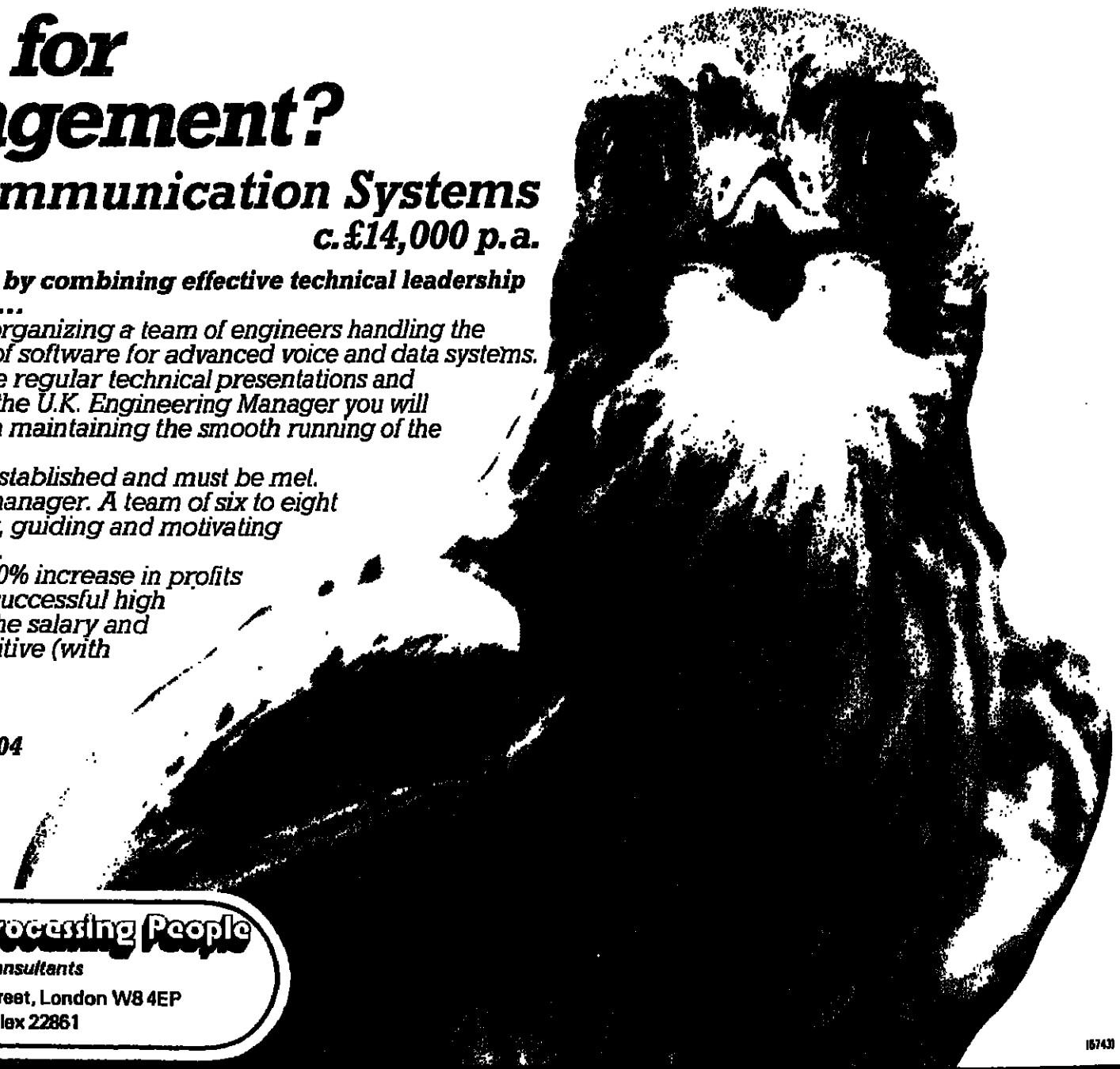
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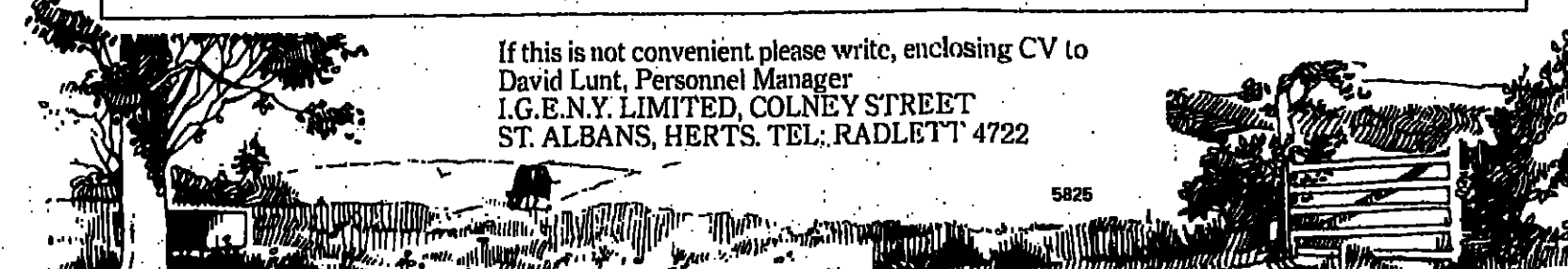
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This key position will appeal to a Systems Programmer who would welcome the opportunity to be in at the start of this company's exciting new project linked to the holiday and travel business. In addition to your sound FORTRAN experience, a knowledge of Perkin Elmer equipment and some database would be welcome plus a sound analysis background. Initially you will be working with a small team and every opportunity for advancement will be available as the company expands. Your involvement will be required in developing sophisticated software for on-line reservations and on-line transaction processing. Also your ability to liaise with users and suppliers will be fully utilized. REF. MW/2833

ENGLEDOWN

COMPUTER PERSONNEL CONSULTANTS

ANY COBOL. £10,000

An opportunity has arisen for two Programmer/Analysts with a prosperous multi-national organisation based in North London. They require a minimum of 18 months' recent experience using any structured COBOL, a knowledge of the UNIVAC 1100 under EXEC 8 being especially welcome. Just one of the many benefits in joining this company is the first-class career prospects and training. If you are educated preferably to graduate level and you are now looking for career advancement within a professional environment they promise an excellent starting salary and all large company benefits. REF. MW/2744

DATABASE PROGRAMMERS

KENT/ESSEX £11,000
Candidates must have a thorough knowledge of Database techniques together with at least 18 months' recent exposure to COBOL. Some UNIVAC 1100 or Burroughs experience would also be an asset although not essential. The nature of the work will be all development and on-line and the successful candidates will be expected to assist in the design of future database as well as getting involved with user liaison and providing help and advice to junior staff. An excellent opportunity for an enterprising person looking to expand his career. REF. MW/2831

DEC-COBOL/BASIC + ENEG

My client, a leading leisure company, seeks an Analyst/Programmer with an out-going personality who enjoys user liaison and problem solving. You must have a minimum of two years' DEC-COBOL and/or BASIC + experience. Based in Herts, you will be developing new systems from feasibility study through coding to implementation, working closely with users throughout. Working mainly with VAX machines under VMS, training will be given to good applicants with thorough PDP, COBOL/BASIC + skills. REF. AW/2815

MAJOR ICL DEVELOPMENTS CITY

To £12,000 + Subs Mort.
This prestigious financial firm based in the City are offering exciting career moves for ICL 2960/VME professionals from programmer to team leader levels. Of particular interest are those candidates who are able to offer skills in either IDMS and/or TPMS. As a successful and progressive company they offer working conditions and excellent perks which include subsidised mortgage and excellent career path. REF. DW/2482

HONEYWELL COBOL

MIDDLESEX £8,500
12 months' Level 64 or 66 COBOL is required by this progressive Middlesex-based company to join their development team. TDS experience would be an advantage although not essential as this company believe in offering their staff a range of training facilities. You will be involved with a range of commercial applications from accounts to stock control systems. The company also offers sports and social club facilities and a subsidised restaurant in their package. REF. DW/2673

HEWLETT PACKARD ALL LEVELS To £14,000

Based in Herts, my client is seeking Analyst/Programmers with good HP 3000/COBOL expertise at any level either junior or senior. The company is expanding and there are many new development projects underway. Prospects are excellent, and management prospects are envisaged for the right applicants. REF. AW/2816

ANALYST/PROGRAMMER

ESSEX c.£10,000
My Essex-based client is seeking Honeywell mainframe COBOL people at Analyst/Programmer level. Two years' relevant experience is required together with IOE and/or TDS. The successful applicant will have the adaptability to work on simple programming projects through to high-level analysis. Applications are mainly commercial and include accounting and order processing. A good career path and attractive salary is envisaged for the right person along with a benefits package including flexi-hours, four weeks' holiday, profit share, pension and medical insurance scheme. REF. DW/2779

HEWLETT PACKARD -

ANLY LANGUAGE To £10,500
Are you currently an HP 3000 Programmer with in excess of 18 months' experience in any language? If so my London-based client, a long established dealing concern would like to hear about you. They are currently developing new systems for both the HP 3000 and HP 250 in SPL, COBOL, BASIC and some RPG II. You will work in a small team using the latest on-line and database techniques. You can expect to progress quickly into analysis. Call me now for further details. REF. AW/2807

For details of our RPG/II opportunities please see opposite page. (6717)

Institute of Aviation Medicine,
Farnborough, Hants
Ministry of Defence

Electronic Engineer

...to provide technical support for experimental research on a variety of projects such as: laser active computer graphics, voice synthesis and recognition, and the man-machine interface. Work involves the design, construction and maintenance of electronic equipment, some of which interfaced with microcomputers. Practical innovations, individual responsibility and the publication of project results are all encouraged. Candidates should have a degree/HND/HNC or equivalent qualification in an appropriate subject. At least 2 years postgraduate experience is required for those with second class honours degree, or at least 5 years experience for candidates with other qualifications. Knowledge of microcomputers or software would be advantageous. Appointment as Higher Scientific Officer £7145 - £9560 with starting salary according to qualifications and experience. RELOCATION ASSISTANCE MAY BE PAYABLE.

For further details and an application form (to be returned by 28 October 1983) write to Ministry of Defence CM(S)1b3, Room 310, Savoy Hill House, Savoy Hill, Strand, London WC2R 0BX. Please quote ref: SA/31/EM.

Scientific Civil Service

SYSTEMS ANALYST OXFORD

circa £10,500

The Company: Highly successful international company concerned with bookkeeping and journal supply worldwide.

The Job: To assist in designing effective book systems on an ICL 2968 and involving TPS and TOTAL ICL hardware experience is not essential.

Experience: ★ Two-three years' experience in a database/online environment
★ significant involvement in at least one major project
★ good communication skills

Benefits: ★ proven ability to work as part of a team
★ In addition to the attractive salary the company offers generous fringe benefits which include relocation expenses

Formal applications, which should include a full c.v. and a day-time telephone number, should be sent to Jackie Gunn, Personnel Officer, B. H. Blackwell Ltd., Beaver House, Hythe Bridge Street, OXFORD. Informal enquiries should be made by telephoning Rod Archer on Oxford 244544. (1820)

BLACKWELLS

COBOL IMS DB/DC CAMBRIDGESHIRE

Contract early start assignments at our client in Cambridgeshire developing on-line Database Systems. Candidates must have in-depth IBM COBOL and IMS DB/DC experience.

Contact Bob Carr at Fraser Williams (Hertfordshire) Ltd, 3A Canberre House, 17-19 London Road, St. Albans, Herts. AL1 1LE
Tel: St. Albans (0727) 34301 (24 hr. Tel. Service)

Fraser Williams Computer Services

LIVERPOOL ST ALBANS LONDON LEEDS MANCHESTER NOTTINGHAM BRISTOL SHEFFIELD GLASGOW ABERDEEN TORQUAY

Computer Programmer

PL/1 and/or RPG II

A vacancy has arisen for a Programmer with E Gomme Limited, who design and manufacture G-Plan furniture. This is an opportunity to fill a key position in a small team, dealing with a wide range of commercial applications. All development is performed on-line for both batch and TP applications. The installation comprises a 1/2 megabyte 370/125 with 3340 disks, tapes and local VDUs operating under DOS/VSE. If you have more than 2 years' experience of PL/1 and/or RPG II, here is your opportunity to fulfil a major role, reporting to the chief programmer.

Salary is negotiable according to experience. Please write to: Carolyn Personnel Manager, E Gomme Limited, Spring Gardens, High Wycombe, Bucks. (9500)

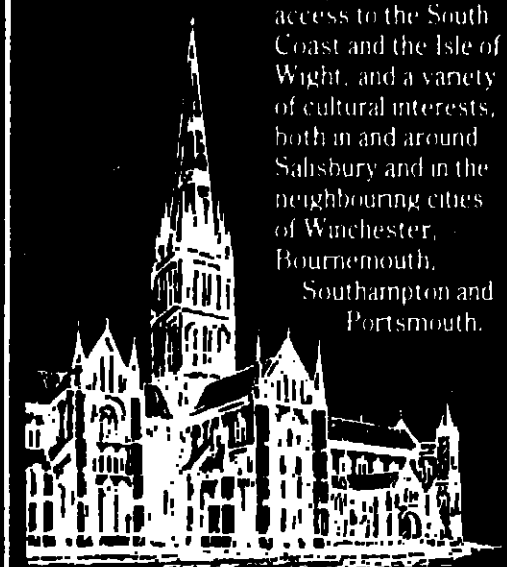
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especially where careers are concerned. Which is a good reason for harnessing your career to the kind of success we're achieving at UK Provident

We are one of Britain's leading Life Assurance Offices with branches in every major city. Our growth in recent years has been dynamic: premium income rose from £91m in 1981 to £142m in 1982 and achievements this year are already well ahead of our target.

We need to support the momentum produced by our sales staff by expanding our data processing services including our TP network and IDMS database. This means that there are now challenging opportunities for a variety of data processing staff to give free rein to their skills. Experience in the financial sector (preferably in Life Assurance) is desirable.

If you are interested, please telephone for an application form or write (giving full career details) to:

Paul Ambrose, Assistant Manager
(Recruitment and Personnel Administration)
UK Provident, United Kingdom House
Castle Street, Salisbury SP1 3BH
Telephone: (0722) 336242

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RPG II/III

IBM SYSTEM 34

An outstanding opportunity has arisen with a London-based company connected with the oil industry. They require an additional Analyst/Programmer with 18 months' IBM System 34/RPG II experience. You will be working in a team where you will be involved with the development of a Management Reporting System so if you want to join a highly motivated team of D.P. professionals, where promotion prospects are unlimited, plus the opportunity to travel abroad at a later date then why not give me a call to arrange a confidential interview. Ref: GW/2882

IBM SYSTEM 34/RETRAIN 38

A highly successful software consultancy based in the heart of the City are seeking to recruit an IBM System 34 RPG II Programmer. The company are currently in the process of the development of new financial systems, both on the IBM System 34 and 38 therefore full retraining on the IBM System 38 will be given. You will be ideally suited if you are an experienced RPG II Programmer with the desire to become involved with the latest on-line techniques. You will be well rewarded in terms of conditions and salary. Ref: GW/2000

PROGRAMMER/ANALYST NORTH LONDON/HERTS BORDERS

A successful international group are planning to develop major new systems which has led to an opening for an additional Programmer/Analyst with an IBM System 38/RPG III background, although an experienced IBM System 34 Programmer would be strongly considered. The candidate chosen for this position will initially be programming, and at a later date move into analysis where you will be sent on full IBM courses. Excellent benefits are offered and relocation assistance is available where necessary. Ref: GW/2733

IBM SYSTEM 38

A superb position has arisen with a major City Bank for an IBM System 38 RPG III Programmer to take up a key position within a small team developing financial and banking systems to a very high standard. The essential requirements are for a self-motivated D.P. professional, with at least 12 months' RPG III experience gained within a well-structured environment. A full banking package is offered including a subsidised mortgage. Ref: GW/2812

IBM SYSTEM 34

An opportunity exists within a prestigious international bank for a capable and experienced Analyst/Programmer to move into a supervisory role. The successful candidate will lead a small team of 4 people currently involved in the development of major new on-line systems. 3 years' programming experience is essential with a minimum of 12 months' IBM System 34 RPG II. This is an important position and career prospects are excellent for the right person. Full banking package is offered including a subsidised mortgage. Ref: GW/3530

For more details of these and other outstanding opportunities, contact Carol Gormer, our GSD specialist, Engledown Computer Personnel Consultants, Brushfield House, 12 Brushfield Street, Bishopsgate, London E1 6AN. TELEPHONE: 01-247 3356 (24 hours).

ENGLEDOWN

COMPUTER PERSONNEL CONSULTANTS

CONTRACTS

IBM SYSTEM 34 RPG II + COBOL ANALYST PROGS LONDON

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IBM COBOL IMS DB/DC ANAL/PROG SURREY

IBM SYSTEM 38 RPG III + MAAPICS ANALYST/PROG SUSSEX

IBM COBOL/SSEMBLER PROG KENT

IBM DOS/VSE VM SYSTEMS PROG SURREY

For further details contact NIK POLAND TLP

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TP

CAN YOU DO OUR BUSINESS ?

LONDON
S.W.17

The South West Thames Regional Health Authority requires additional staff within COMPUTER OPERATIONS. To be based at their regional computer centre located at Springfield Hospital, Tooting, London S.W.17.

Computing Services are based upon ICL 2966 and 2956 MAINFRAMES running under GEORGE 3/DME which provide financial, medical and managerial information to the region.

DEC VAX MINI-COMPUTER are currently being installed to provide On-line patient administration. Direct Data Capture and Database facilities to hospitals within the region.

A two-shift system is in operation, and where* indicated the quoted salaries include London Weighting and shift allowance. Additional benefits include excellent recreational facilities (both on-site and nearby), coffee lounge and modern offices.

OPERATIONS CONTROLLER £11,237-£14,029*

An operations professional is required for this post. Reporting directly to the Operations Manager the successful candidate will be responsible for the shift management of up to 40 personnel and the co-ordination of all activities within operations, including Data Control and Data Preparation.

Applicants must possess proven managerial ability with good communicative skills, both verbal and written. An in-depth knowledge of ICL 2900 hardware is essential.

COMPUTER OPERATOR £6,820-£8,000*

An experienced George III operator is required to fill this vacancy. Experience of working in a busy medium/large installation would be an advantage, although this is not essential.

OPERATIONS SUPPORT CLERK £6,667-£9,151

Previous experience in operations is required for this new post to assist the Operations Support and Liaison Officer.

Candidates must possess an in-depth knowledge of ICL utilities and job control language. An ability to communicate clearly and effectively is essential.

DATA CONTROL CLERK £6,820-£8,000*

A vacancy exists for an experienced Data Control Clerk with a good knowledge of GEORGE 3 JCL and a sound understanding of data control standards and procedures. Suitable trainees will be considered.

DATA PREPARATION SECTION LEADER £5,683-£6,667

An experienced person is required to lead a team of up to 10 Punch Operators. Previous supervisory experience is essential, and a knowledge of CMC 5200 equipment would be an advantage.

DATA PREPARATION PUNCH OPERATORS £4,871-£5,443

Vacancies exist for Punch Operators with good key depression speeds. (10,000+). Experience of CMC equipment would be an advantage. A bonus scheme is in operation.

For further details contact:
Norman McGregor, SWTRHA, Regional Computer Centre, Springfield Hospital, 61 Glenburnie Road, London S.W.17. Tel: 01-872 9988

Senior Systems Programmer VAX/VMS

INMOS is now firmly established as a world leader in high performance memories and is about to enter the micro-processor market with a range of innovative products for 'next generation' systems.

We have advanced design and manufacturing facilities in the UK and the US, supported by a worldwide sales and marketing organisation. Our Information Systems group is key to these activities, with responsibility for our multiple VAX configuration, extensive telecommunications network, CAD/CAM applications and office automation.

INMOS is expanding rapidly and as a result we have an outstanding opportunity for a Senior Systems Programmer to join the Technical Support group of the Information Systems division, based at our UK Technology Centre and corporate headquarters in Bristol. As a member of a small team, you will be responsible for the development and implementation of systems and utility software and for performance monitoring, optimisation and day to day running of the computer centre and European data communications network. In addition, you will provide guidance on systems related software to a diverse range of users at all levels of the organisation.

You must have had at least two years' VAX/VMS systems experience and have a sound knowledge of FORTRAN, DECNET, COBOL and BCPL knowledge will be an advantage. Adaptability, good communication skills and the ability to work under pressure in this stimulating and technically challenging environment are essential.

Our requirements are exacting but if you meet them we can offer an excellent salary and benefits package and the opportunity to progress your career in one of the most technically advanced companies in the semiconductor industry.

Telephone for an application form or send full details of qualifications, experience and salary to: Jacquie Porter, Personnel Services Manager,

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IBM Programmers

Looking for a new career?

With an IBM 30nn or 43nn environmental background and a year or more of PL/I or COBOL experience, you are a highly sought after individual. Add some knowledge of CICS, IMS or DL/I and an even wider range of opportunities lies at your feet.

That is not all - those RPG experts working with IBM System 34, 36 or 38 kII are also in the running for some very attractive propositions.

Our banking and finance clients in and around London are urgently in need of programmers,

analyst/programmers and systems analysts to work on a very wide variety of interesting projects. Each installation with which we are dealing has adventurous and expansive long term development plans offering you not only the opportunity of an excellent career but also the chance to acquire valuable business and applications experience.

Working conditions are excellent and salaries are most competitive, ranging from £8,000 p.a. upwards, plus typical banking benefits packages.



Alimand Computer Resources Ltd

15/17 City Road, London EC1Y 1AA. Telephone: 01-638 8411 or 01-920 0801 (24 hr)

Please send your Curriculum Vitae or telephone Lynn Roylance for an application form

London to £18,000

This is a particularly attractive part of the computer industry combining, as it does, the areas of international high finance and constantly improving computer communications systems. Our client has a lengthy background in this area using DEC equipment and now requires additional development and support staff. Good commercial experience in banking or finance is the major requirement.

Cambs/M'chester package £12K + car

Continuing expansion and promotion have created vacancies in this highly successful communications products company. Although data comms. experience preferred we would be interested in applicants with experience as Field Engineers for computer manufacturers. Candidates need to be self motivated with a good client contact manner.

Systems S/W Development

Oxon/Berks. to £14,000
For anyone who can show 1 to 5 years experience in compiler techniques, software tool development, Artificial Intelligence or scientific programming, here is an excellent opportunity to broaden your experience and advance your career with a respected and successful systems house. VAX experience would be advantageous. Rewards according to experience and ability.

Sen. Elect. Engineer

Berks. £10K-£12K
The small research unit of a major multinational company currently requires an electronics engineer with 3-4 years experience of digital circuit and computer systems design. You will be supporting the development of image processing and data base applications - orientated systems, designing special-purpose hardware, evaluating equipment etc. Assembler experience a great advantage.

Herts. £9K-£12K

Continued expansion of our client's system software development has resulted in a number of vacancies for enthusiastic and, above all, outstanding systems programmers and engineers. Opportunities exist in many areas including compilers, application tools, transaction processing, comms., etc. We can introduce you to genuine career opportunities offering significant responsibility at the leading edge of technology.

Cambs/M'chester package £12K + car

Continuing expansion and promotion have created vacancies in this highly successful communications products company. Although data comms. experience preferred we would be interested in applicants with experience as Field Engineers for computer manufacturers. Candidates need to be self motivated with a good client contact manner.

Sen. Systems Engineer

Herts. £10,000
Our client is currently seeking hardware engineers with four or more years background in microprocessor or complex logic design to participate in the development of a new series of minicomputers and associated peripherals. You should be able to demonstrate project leadership ability and a sound understanding of peripheral and communications interfaces.

Tandem Development

Middx. £7K-£12K
Opportunities to work on Tandem computers without previous Tandem experience are uncommon and extremely attractive. Our client wishes to meet genuine systems software development people who are keen to develop their careers in a software products company. If you have one or more years experience using assembler and a high level language we would like to hear from you.

Sussex £10K-£15K

Recent major changes to our client's product range necessitate the recruitment of experienced real-time programmers with a background of at least 3-4 years using PASCAL, preferably with Motorola processors. Particular applications include process control, fail-safe error recovery, advanced diagnostics and self-test and on-line communications to micros and minis.

Middx. £10K-£15K

Two vacancies exist in this development group responsible for the production of Advanced Signal Processing and CAD systems. Packages will include UNIX-compatible Operating Systems, LAN, compilers, high-speed interactive graphics and Videotext look-alike software, using PASCAL and BCPL on Special Processor and system architectures. Degree (or equivalent) and expertise in BCPL and disc-based O.S.'s is essential.

Wales/West Development

London to £16,000
Attractive positions exist for software professionals in the further development of view-data products and related technologies. Currently using PDP11 and VAX with RSX11 and VMS but shortly adding UNIX and 'C' for development tools. Fortran experience would be of immediate interest. Positions range from development to project management in a customer environment.

Real-time Specialists

Hants. £15K-£15K
Does your background in systems design and programming include experience of CORAL, MASCOT, INTEL 8086, Vax or Quality Assurance? Outstanding opportunities exist with our client for technical specialists to undertake various activities including software Q.A., consultancy, proposal preparation, etc. with the option of moving into project or general management. These positions offer significant scope for career development.

Herts. to £14,000

We are seeking a very experienced person in the area of real-time control systems to solve a range of market needs in the process control field. Candidates must be capable of new product specification and overall systems design. They will follow products through from specification to market launch ensuring continuing product compatibility.

Berks. £9K-£12K

A successful company with a product having a special place in the communications and travel industry, requires several programmers at different levels to join existing development teams. Areas of relevant expertise include Z80 Assembler, PDP11 systems, UNIX and 'C', PLZ, Viewdata, CP/M, comms. and travel agency applications. Excellent benefits include special holiday discounts.

UNIX Designers

Herts. £12,000
Joining a new development team offers extra opportunity. New product development offers a design challenge and the area of office systems products offers the growth market for the future. All of these are open to skilled operating system software designers with some UNIX experience. Our client is large and successful. They offer long term prospects.

Systems Consultants

Middx. to £20,000
A rapidly expanding computer services and consultancy company requires top level specialists in data communications, distributed processing and electronic point of sale systems. Successful applicants can expect to become involved in any or all activities from: Consultancy, project management, system design, program development, system testing, installation and education. Rewards will be consistent with the level of experience.

Berks. to £15K + car

We are seeking candidates with 4-5 years experience in an IBM/CICS environment using DBMS to provide pre- and post-sales consultancy for a prestigious company. You must be a self-starter, have a good client manner and be familiar with assembler and a 4th Generation language (e.g. MANTIS). High rewards await outstanding applicants.

Herts/Beds. to £14,000

Develop your career and your communications software skills by joining a company whose existing range of comms. software is second to none. There are a number of teams working on various developments covering LAN's, X25 and 3270 compatible products. Development is on mini and micro systems in assembler and high level languages. Reloc. assistance where appropriate.

Teach/Technical Assistant

Beds/Herts. £9K to £12K
These are no ordinary positions; we are convinced that any technical authors who are seriously interested in developing careers with leading companies in the computer industry should be talking to us. Our clients are seeking experienced authors who can work closely with software and/or hardware development teams to prepare user manuals and operating instruction texts.

Sen. S/W Designers

Beds. to £16,000
An established centre of software development for advanced mini computer systems has identified the need for a major new product. Several very experienced software implementers are required to work together to design and build this product. Most appropriate areas of previous experience are T.P. monitors, comms. and O.S. We wish to hear from people with 6+ years experience.

Open letter to technical and commercial job seekers at all levels:

We are here to help you. Our free service, to you, is advice and counsel in identifying the most suitable position for the development of your career. Our consultants have held senior positions in the computer industry. They have the experience to understand your needs. If we do not have the position you want, we are prepared to help you find it. Why not accept this invitation to talk over your ideas with us.

Write or telephone (02403) 28383 during office hours - We are always ready to discuss these and many other interesting positions. Evenings and weekends only.

Terry Harvey - Great Mearnsden (02406) 4705
Brian Coates - Chessham (0494) 785722
John Barker - Camberley (4276) 61297

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c. £18,000

You are a computer professional through and through. You know that you have the ability, experience and maturity to head up an Operations team. You also know that you are ready to take a major step forward on your career path.

As Manager Computer Operations, you will report to and deputise for the Head of Computer Services. The person we are seeking should be capable of succeeding to this more senior role after demonstrating successful management of Computer Operations - the provision of cost-effective services which support the daily settlement of deals on the trading floor of The Stock Exchange.

Sound experience of IBM equipment, software and business practices is essential, and you should be fully conversant with MVS systems and dual processing operation. In addition to technical knowledge, great emphasis will also be placed on man-management skills, and apart from successful liaison with user departments and suppliers, you must have the ability to maintain the complete support of the Operations staff.

This is an opportunity providing excellent career prospects. The starting salary will be in the region of £18,000 p.a., and the benefits will include a fully-paid season ticket, non-contributory pension scheme, 25 days holiday, lunches and flextime.

Please apply with a full curriculum vitae to: Mary Thom, Manager Personnel Services, The Stock Exchange, Old Broad Street, London EC2N 1HP.



The Stock Exchange

Search Consultants

Lloyd Chapman Associates provide comprehensive and efficient assistance to clients in every aspect of the recruitment process, both in the UK and internationally.

With successful operations in the Data Processing, Accountancy, Banking, Sales/Marketing and General Management disciplines, we are proud of the reputation for professionalism that we have gained.

To satisfy the increasing demands for our services, we are now seeking to appoint two self-motivated individuals within our Data Processing Division. Your responsibilities will be varied, including establishing and maintaining firm client bases, advising on different methods of recruitment, the planning and management of advertising and search assignments and the marketing of selected people to new and existing clients.

Ideally in your mid to late twenties you must have:

- either a provable record of success as a Recruitment Consultant in the Data Processing sector
- or a sound background in data processing with a desire to move into a selling environment
- plus energy, ambition and determination coupled with good interpersonal and organisational ability

Remuneration - the people we are seeking will be disappointed (and so will we!) if they earn less than £14,000 during their first year. A very attractive package, based on performance, enables a successful consultant to earn in excess of £25,000.

We are a young company - we expect our consultants to become actively involved in the running and organisation of the business and opportunities for progression into management are excellent.

To discuss these positions in more detail and in the strictest confidence telephone or write to David Lloyd.

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Associates**
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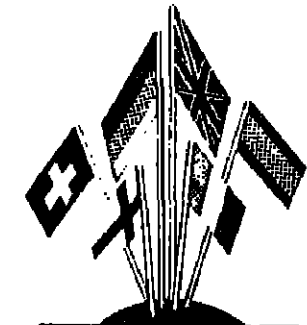
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Our Client are a leading manufacturer of 16 bit multi-user systems, with a comprehensive and highly successful range of hardware, complemented by an extensive range of vertical market software. They have recently moved their European Headquarters to the Thames Valley, and as a result of this transition are looking to employ a

EUROPEAN BUSINESS MANAGER



circa £30K + Car

This is a key position within the company and responsibilities will include, establishing and monitoring major accounts and distribution outlets throughout Europe. This includes total responsibility for all revenues within the region.

Ideally, applicants will be technically competent, have a strong business background and be conversant with another European language.

Preference will be given to applicants already in a similar role, with experience of selling minis or related hardware products in the European market place.

In return the company offers an exciting opportunity to play a major role in one of the most successful and rapidly expanding high technology companies in Europe.

Benefits will include, high base salary, prestige company car and free BUPA membership.

The real benefits derive from working for a growing company which is already one of the outstanding successes of the 1980's.

For further details telephone Barbara Allen at our Reading office.



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Systems and Programming Manager...

Rural Home Counties

Salary c.£20,000,
quality car and excellent benefits

...for the management services division of a vibrant and expanding financial services organisation of high international repute.

To maintain the forward momentum of the Group and capitalise upon diversified market opportunities, our client is fully committed to advanced information processing technology and innovative system developments.

Managing the total development resource and reporting at Director level, the successful candidate will lead a well established, multi-disciplined department around 25 strong, through all phases of systems development, from inception to final implementation.

The prime requirement is for a mature and dedicated systems development professional whose management skills and personal initiative are evident through a demonstrable record of successful achievement. A solid technical background which includes IBM mainframe experience is essential but specific experience of the financial sector, whilst desirable, is secondary to management capability and personal attributes.

Salary is as indicated and the comprehensive benefits package includes mortgage allowance, free medical insurance, generous life assurance cover and excellent pension scheme. Relocation expenses to a most attractive area of the country will be met as appropriate.

Please write in confidence to JOHN KITCHEN, at the address below, quoting Ref. GW1159.

BIS Applied Systems Limited
York House, 199 Westminster Bridge Road
London SE1 7UT
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The IBM SYSTEM/34/36/38 Recruitment Specialists

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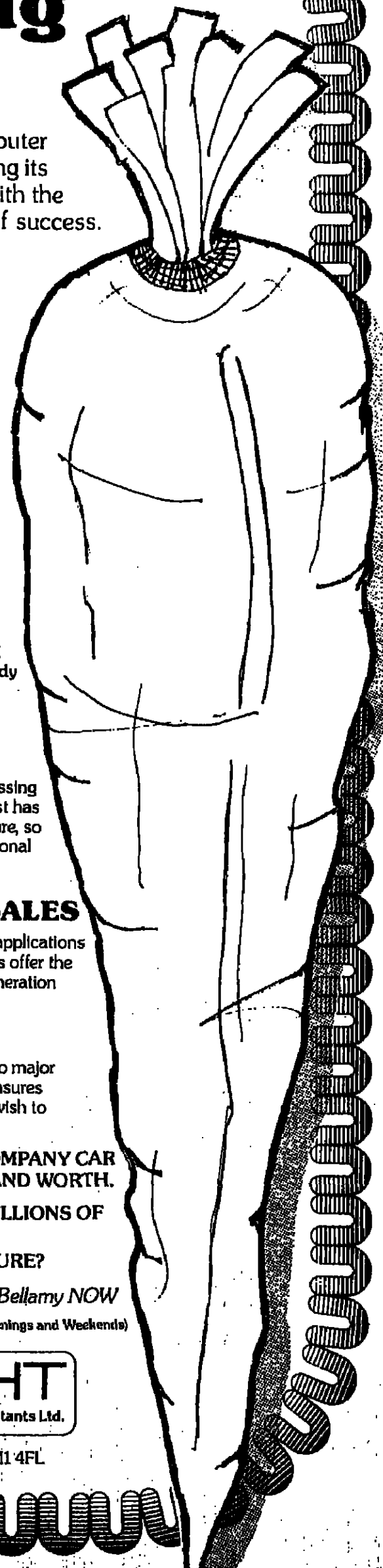
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For further details or an application form telephone me now - or write enclosing a comprehensive c.v. Roger Down, Fisons Horticulture Division, Paper Mill Lane, Bromford, Ipswich IP8 4BZ. Tel: Ipswich (0473) 830492.

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The successful candidate should have a solid programming background within a DEC environment to include at least one year with any VAX equipment. The ideal language would be MACRO 32 but the bank are prepared to retrain and therefore wish to interview analyst/programmers with MACRO 11 or any high level language. Applicants should be educated to a minimum of 'A' level standard and be good communicators but more importantly should have the ability and drive to join a small team of enthusiastic analyst/programmers working in a stimulating environment. Previous banking experience would be of special interest but by no means essential.

To find out more about this excellent career opportunity please contact SEAN ORSLER on 01-404 4821.

404 4821

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The successful candidates will have a positive approach to both pre and post sales, together with at least 5 years computing experience. You will need to demonstrate experience of:

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- Systems Analysis
- Mini Computers
- Project Management
- Telecommunications
- Sales Support

Systems Advisers

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To be offered these positions, you will need to have up to 5 years computing experience and will be able to demonstrate a working knowledge of the following:

- Commercial/Business Systems
- Systems Analysis
- Mini Computers
- COBOL programming experience

Senior Programmer/Analysts

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These roles will assume the principal technical responsibility within the Group. The following expertise is required:

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- Real time commercial applications experience
- Experience of structured programming
- Telecommunications

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Career prospects are good for an enthusiastic, innovative man or woman and a competitive salary will be offered to a candidate of the right calibre.

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SENIOR PROGRAMMERS
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Do you have 18 months+ experience as a PL/1 Programmer and wish to join a company offering real career prospects, coupled with involvement in exciting development projects. If so, then this leisure services company housing an IBM 3033 with MVS, VM/CMS, TSO & RAMIS would like to meet you. Some assignments will involve programming in COBOL and full training will be given in this area. Ref: M2128

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SENIOR PL/1 PROGRAMMERSFINANCIAL SECTOR
ATTRACTIVE PACKAGE

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Several of the larger, well-established consultancies are currently undergoing massive recruitment campaigns. Their requirements are as FLEXIBLE as your needs. If you have any of the following attributes - COBOL, PL/1, CICS, DL/1, VAX/PDP, ADABAS, IDMS, IMS DB/DC, EASYTRIEVE, VOLLE, ROSCOE, RPG II or III, ADF, TSO/SPF, UFO, MK IV, SHADOW, SDS/O - you could soon be working in this fast and rapidly expanding environment. Obviously the more versatility you can offer our clients, the better the salary they can offer you. At a more senior level, salaries can be up to £20K plus expenses and European travel. These are ideal opportunities for programmers with around two years' experience wishing to expand their knowledge, as extensive TRAINING will be provided. If you're interested in getting out of that day-to-day end-user rut, contact SIMON KONING to discuss these exciting opportunities further.

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ANALYST/PROGRAMMER

LONDON TO £12,000

An international pharmaceutical company based in London are in the process of developing major new on-line systems. The current configuration comprises of an IBM 4341 running under VM/CMS, using CICS and DL/1, with proposals to implement new utilities such as MANTIS. They now require an Analyst/Programmer with a good COBOL background to assist in the implementation of the new systems. The ideal candidate should not have less than one year's COBOL programming experience with some exposure to an on-line and database environment, although for the right person, extensive training will be provided. This is one of the few major companies that offer a structured career path into an area of DP of your choice, i.e. pure analysis, or a more technical role such as systems programming. Company benefits include THREE SALARY REVIEWS a year; family BUPA and if you like GOOD FOOD, a FREE three-course lunch. Food for thought! If you're interested to learn more about this exciting opportunity, then call me, SIMON KONING.

PROGRAMMER/ANALYST

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Three of our clients have asked us to identify candidates to help them fill some urgent requirements within their existing DP departments. The first is a MULTINATIONAL ENGINEERING COMPANY that still retains a friendly but hard-working environment. The work falls into two phases and with a GENERAL COMMERCIAL APPLICATIONS background and some experience of ENGINEERING you will have the RIGHT experience. Development work is carried out on a PRIME with FORTRAN, BASIC, COBOL and INFO and other MINI experience would be useful. The positions are LONDON based and the salary range is £10,000 to £12,500. The second is a major ICL site, who have many openings. PROGRAMMERS are needed who can capitalise on their own personal skills preferably with VME 2900, VME/B experience. The work is both interesting and rewarding and depending on skills the salary range is between £8,500 and £16,000. Thirdly REALTIME SOFTWARE and HARDWARE ENGINEERS are required by a very successful manufacturer and systems house. ASSEMBLER skills or GRAPHICS experience with DEC or INTEL is of interest as is experience with PASCAL and C.

SNR SYSTEMS ANALYST / ANALYST PROGRAMMER

Herts/Essex Border to £12,000

International Distillers and Vintners (I.D.V.), part of the Grand Metropolitan Group, commenced a major investment program to bring DP services in house two years ago. To maintain the impetus of development they now need two additional experienced systems professionals.

Based at the central office you will join a small dedicated team working directly with the users on the development and implementation of major commercial systems. Hardware is an IBM 4341 group 2 running under DOS/VSE with Data General Novas and Eclipses in the distribution centres. The programming language is Cobol with extensive use of CICS and DL/1.

To rise to the challenge of working within this exciting environment you should have had around four years total DP experience covering both programming and systems. Exposure to CICS and DL/1 would be a considerable advantage, however, the major requirement is for business awareness. Applicants who have not had this experience but who believe they can mature in this dynamic environment should apply as opportunities exist at slightly lower level.

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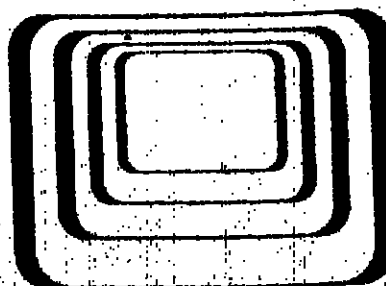
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An engineer is required by a leading equipment manufacturer. Our client is ideally situated north of London, well served by rail and road. You will develop new microprocessor-based modems and local area network products and be expected to take a product from conception to production. A degree is highly desirable whilst at least two to three years' design experience with microprocessor-backed logic systems is essential. GMF33/8

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A London-based Systems house is currently seeking scientific programmers to work on site in the West Country for a minimum of two years. Candidates should have experience of Fortran on VAX machines and an interest in graphics-type applications. In addition Programmers with Coral are required for engineering systems. DLM33/7

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A top consultancy commanding large contracts with the MoD require Professional Programmers and Software Designers to work on Real Time Defence Systems. Candidates should have a degree plus experience of CORAL and preferably MASCO. Experience with CONTEXT and VAX machines would be helpful. Successful candidates' careers will be enormously helped by being associated with one of the top names in the industry. DLM33/15

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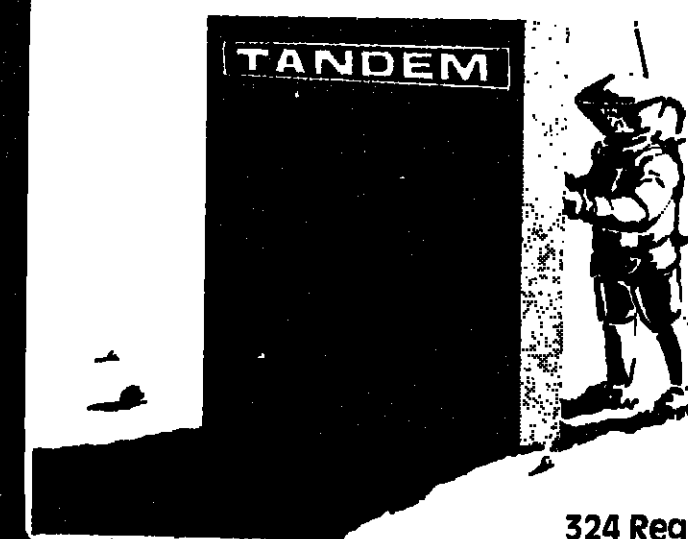
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(5281)

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The Company
Glaxo is one of the world's leading pharmaceutical Corporations based in the U.K. and trading throughout the world.

The Requirement
We are seeking to employ a project leader who will take responsibility for the automation of our North European operating companies. The successful candidate should have a sound IT background including experience of using various database techniques in a commercial environment. We envisage that he will probably be in his late 20's qualified to degree level and currently either a senior analyst or project leader.

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As well as a highly competitive salary we offer the usual benefits of a large company including a non-contributory pension, a group BUPA scheme, sickness benefits and generous expense allowances when travelling on company business.

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It's a role calling for extensive computing experience - at least 10 years in DP, with proven ability in programming, systems analysis and management - plus sound communications and leadership skills. A formal qualification to degree or equivalent level is also required.

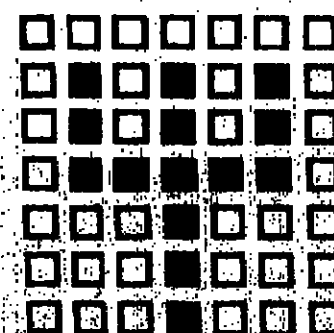
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JOBS IN THE NORTH

The lure of the north hypnotises southerners

Graduates from the south are keen to stay in their university towns in the cold north says Margaret Park

ONCE a misconception about the north of England — the idea that its inhabitants flock south to the (sometimes) sunnier vistas and picturesque surroundings — is nowhere clearer than in the behaviour of northern computer staff.

If they come from the north, it's the north they love and the temptation of slightly more opportunities down south has little pulling power.

And even dyed-in-the-wool southerners are hypnotised by northern charms — gone is the idea that no-one not wearing a strait-jacket would venture nearer to the North Pole than Potters Bar.

Hull, for example, a name not calculated to fire the imagination of those ignorant of its appeal, apparently lays claim to countless graduates of its university who, having spent three years studying in the city, will not be torn away.

Radius Computer Services says a large number of its technical recruits are Hull graduates who want to stay.

"We get a lot of interest locally in our adverts," said Radius company secretary, Pamela Watts. "Once people have been here a couple of years they want to stay

and we don't usually lose staff to companies outside Hull."

Radius, which is made up of two companies — Radius Ltd and Radius Computer Maintenance — has firm ideas about what makes a good programmer or analyst.

"We prefer to take trainees who haven't got a computer background," said Watts. "Those who've done computing courses," she added, "arrive with closed minds and haven't the flexibility of attitude that makes a good programmer."

Radius has recently been successful with two graduate recruits from disciplines as far removed from computer science as possible. Both are from Hull University but one studied philosophy and the other psychology.

Radius' recruitment is steady at present according to Watts, who says the company is in more need of staff for the field engineering and technical side of the business than software people.

The technical staff are those who train new customers to use their systems and give demonstrations to prospective buyers.

Of the company's 70 staff, two-thirds are technical in one way or another and most are committed to

life beside the river Hull.

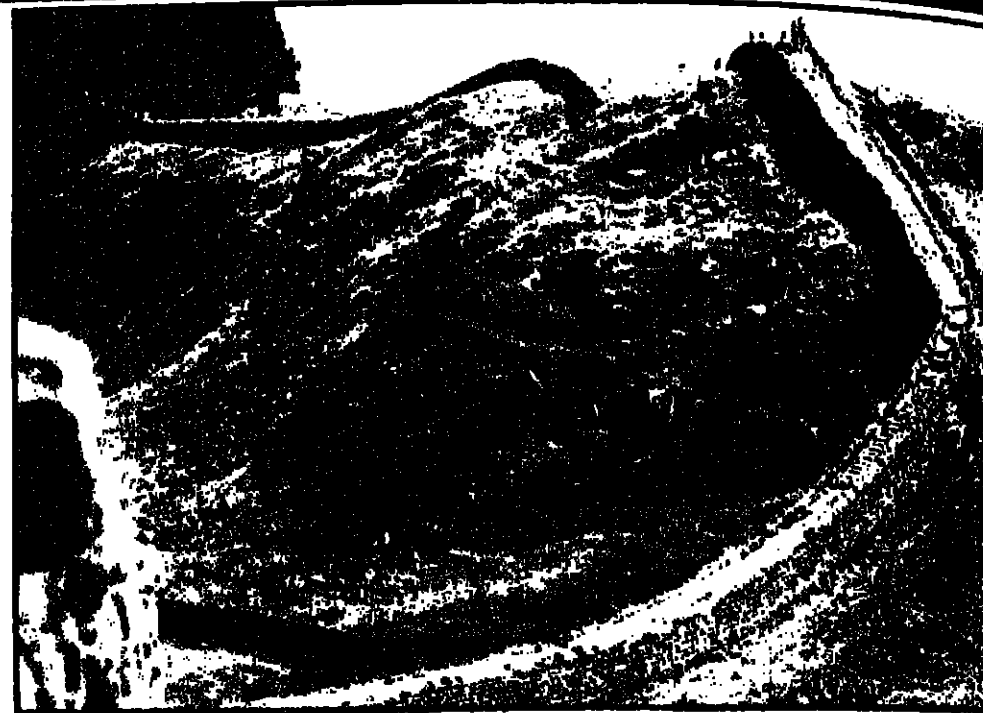
"We're a bit isolated from the rest of the north of England," said Watts, "but it's very pleasant, and most of our staff losses are to local competitors."

Two sizeable northern firms who are probably representative of many more say that their need for computer staff has been cut by a move to distributed data processing.

"Once people have been here a couple of years they want to stay and we don't usually lose staff to companies elsewhere"

sing which puts more of the computing responsibility in the hands of the end user.

Northern Foods, for instance, the holding company for a large collection of food firms once carried out the data processing for all its subsidiaries at its Hull headquarters. Now its subsidiaries, which include North Country Breweries and Dale Farm Foods,



It's the north's attractions and not its dark satanic mills that appeal to southern graduates.

have their own minis or mainframes according to their needs.

Northern Foods itself is currently looking for one replacement programmer and will provide support for its ex-users where necessary. The computer centre's operation is not being wound down completely because it still carries out centralised functions such as pensions schemes and payroll which couldn't efficiently be distributed amongst the smaller companies.

"We're trying to identify our future role," said a spokesman for Northern Foods. "We won't close the centre but some of our computing staff have moved to the operating companies where their skills are more urgently needed."

"We've had an effective role in the past," he went on, "but this change is a recognition of the age of the micro. Our users have said 'I can do it myself for less money'."

"It makes sense for our users to be responsible for their own re-

quirements," said the spokesman, "and we support them if they need it. For around £3,000 to £4,000, a micro-based system in their own building will do the job they want."

A Huddersfield engineering firm is going through the same process of change.

"We're reducing staff because of a new computer strategy that is moving to distributed processing based on Honeywell DPS 6 minis," said a spokesman for the firm, "and this means more responsibility for the end user."

This same engineering firm has recruited a senior systems analyst with the right background.

"We didn't get a very good response to our advertisements," the spokesman said. "None of them had the sort of experience we wanted."

The company is after an experienced systems analyst but one with a background in what is

known as a made-to-order manufacturing environment. It means the company is concerned with manufacturing goods made to customer specifications.

In the public sector, the pace for the north of England is swift and uncertain as for the rest of the country. With massive cuts in the national health budget, recruitment for the regional health authority computer department will suffer.

A spokesman for the North Regional Health Authority's Newcastle said: "No computer staff can be taken on now with the express permission of the regional team of officers which is top authorising body in the area."

And at the headquarters of a local authority, Newcastle, Tyne, the story is even worse.

"It's possible," said the processing manager, "that we have to cut back on staff levels those in the computer department."

Batchelors is in the middle of an extensive programme of introducing on-line systems across three sites, through a network of IBM 4300s operating under DOS/VSE. The following are currently required to fulfil key roles in the current high development environment at our Head Office in Sheffield.

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If you have the skills that we can use in this demanding business, then contact me, Martyn McReynolds, for an informal discussion as soon as possible — either on 061-832 9401 or on 061-427 1288 outside office hours.

JOBS IN THE NORTH

Systems Programmer

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We are looking for an additional systems programmer who will be responsible for the maintenance of the operating system and teleprocessing/database software. Applicants should therefore be fully conversant with either MVS or OS and CICS/DLI in an operational

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A competitive salary is offered together with a benefits package usually associated with a large company, and assistance with relocation will be given in approved circumstances.

Write with full career details to: Derek Cuthbert, Development, Training and Recruitment Executive, Formica Limited, Coast Road, North Shields, Tyne and Wear, NE29 8RE.



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This is a new appointment and an ideal opportunity to join a progressive organisation at a time of major developments in its computer facilities. Written applications, in confidence, to: Malcolm Dutton, Personnel and Training Manager, Preston Farmers Limited, Kinross, New Hall Lane, Preston, Lancs. PR1 5JX.

(5688)

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Mainframe experience is essential since the Polytechnic runs an IBM 4341 supporting over 100 terminals concurrently, but experience of microcomputers is also important.

Applicants should be able to demonstrate both sound programming experience and ability to motivate and supervise people.

Application forms and further details are available from the Personnel Department, Sheffield City Polytechnic, Halfords House, Fitzalan Square, Sheffield S1 2BB. Tel: 0742 20811 etc 361. Completed forms to be returned by 18th October.

Sheffield City Polytechnic is an equal opportunities employer.

(5619)

APPLICATIONS PROGRAMMER

MALE OR FEMALE
£ Salary negotiable

Sedgefield Area Fringe benefits
Challenging opportunity to take responsibility for day-to-day running and program development on commercial real-time micromainframe project. The successful applicant is likely to have at least two years' applications software experience on multi-user hard disc minicomputer systems.

Alpha Micro computer: 80 megabytes hard disc, 1 megabyte main memory, 20 VDU terminals, with networking to satellite offices. Alpha Basic.

Alpha experience not essential, since training will be given.

Please contact John Richardson, 40a New Street, Birmingham B2 4NU. South Yorkshire TEL 0793 57575. Fax: 0793 57575.

(5699)

Lysis
Computers
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GREATER LONDON Recruitment Feature

13th October

This feature, with full editorial support, will highlight job opportunities in the Greater London area.

For further information, please contact

01-661 8080 (Direct clients)

01-661 8787 (Consultancies)

COMVEC CITY OF DUBLIN VOCATIONAL EDUCATION COMMITTEE

Dublin Institute of Technology

College of Technology, Kevin Street, Dublin 8.

Lecturer in Computer Science

Applications are invited from suitably qualified persons for the above whole-time teaching post at Lecturer Scale Level.

MINIMUM QUALIFICATIONS:

- A first or second class honours degree of a recognised university in a relevant discipline or an equivalent qualification;
- At least three years approved postgraduate experience in third-level teaching and/or in the development and implementation of Computer Systems and/or Research.

Qualifications, salary and conditions of service as per Memo V.7 of the Department of Education.

SALARY:

IR£11,227 to IR£15,806 (Incremental credit up to a maximum of five years may be permitted in certain circumstances).

Applications on the standard form and further information available on request.

Completed application forms must reach the Secretary/Registrar not later than 12 noon on Tuesday, 1st November 1983.

(5573)

Chief Executive Officer: W.J. Arnold, B.Com., H.Dip.Ed.



LECTURING POST Lecturer II/Senior Lecturer in Computing

Preference will be given to well-qualified candidates with research or development experience in computer graphics, artificial intelligence and knowledge based systems.

Salary: £7,215-£13,443 p.a.

Details and application forms returned by October 10, 1983, from Huddersfield Clerk, The Polytechnic, Wolverhampton WV1 1SB, or telephone Wolverhampton (0902) 710654 (ansaphone).

(5748)

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UNIVERSITY OF SALFORD Department of Civil Engineering

SCIENTIFIC OFFICER

Applications are invited from suitably qualified persons with expertise in micro-computer hardware and software.

The successful applicant will be required to:

- Assist in the linking of laboratory experiments to computers including development of the necessary hardware and software;
- Collaborate with academic staff in the development of software for both undergraduate teaching and research applications.

Salary within the range £7,190-£11,815 p.a., depending on age, experience and qualifications. USS benefits. The post is available immediately.

Application form and further particulars from the Registrar, University of Salford, Salford M6 4WT (tel: 061-736 5843 ext. 216) to whom completed applications should be returned not later than 17 October 1983, quoting reference C/234/CV.

(5628)

GREAT GRIMSBY BOROUGH COUNCIL MANAGER

Information Technology Centre
£9,945-£11,025

Applications from registered disabled persons will be welcome.

An Information Technology Centre is to be established in Great Grimsby with the aim of helping the unemployed young people gain work experience and training in the area of new technology. Thirty young people and five adult staff will be involved in such fields as basic electronics, basic computer skills, word processing and the electronic office. We are seeking a person with proven managerial experience, a capability in both hardware and software, a knowledge of production and marketing techniques to help set up and then to manage the efficient operation of the Centre.

An outline job description and application form are available from the Personnel Officer, Great Grimsby Borough Council, Municipal Offices, Town Hall Square, Great Grimsby DN1 1HU, telephone number 0472 59161. Completed forms must be returned by 14th October, 1983.

(5728)

CAE Development/Support

W Midlands £7-13K

CAE systems division of manufacturing corporation require staff for new development and package support for engineering design applications. Degree standard applicants should have relevant experience in Fortran/Basic on IBM mainframes under MVS/TSO, or on DEC PDP or similar minis. Senior positions require good experience of structural analysis (finite element)/graphics. Ref. 601

DEC VAX Permanent/Contract

West, Wales £ negotiable

Manufacturing and distribution companies require DEC VAX programmers and analyst programmers at varying seniority levels for commercial applications development in Cobol under VMS. More senior positions call for minimum 6 years d.p. experience including two on DEC VAX. Excellent permanent and contract opportunities. Ref. 509

DEC VAX Systems Programmers

Wilts, Avon £10-12 K + negot.

Subsidiaries of large companies seek two systems programmers for systems software support, performance monitoring, systems tuning and some development work on VAX 11/780's under VMS. One position requires DECNET knowledge; both require good Fortran. Experience in Basic/Assembler/Pascal desirable. Excellent conditions. Re-location assistance. Ref. 870

HP Analyst. Programmers

S Wales, Hants £9-11K

Manufacturing companies with multi location installations in UK and Europe require an analyst based in Wales and programmers based in Hants with a minimum of 1 year's Hewlett-Packard experience on commercial applications. Frequent travel involved - outgoing personalities required. Excellent career opportunities. Ref. 883

Write or telephone:

London West Computer Recruitment
Evergreen, Dauntsey, Chippenham,
Wiltshire SN15 4JA

Telephone: (0249) 891114

LWCR**London West Computer Recruitment****IBM Programmers**

Berks

£9-13K

A major group with a large IBM mainframe network seeks several programmers with IBM Cobol experience to work on on-line commercial database systems using CICS and DL1. First class opportunities for career progression. Excellent salaries and conditions. Re-location assistance. Ref. 827

ICL Analysts, Programmers

S Wales

to £12K

Financial services organisation requires analysts and programmers to develop systems on large ICL mainframe. Experience of financial applications essential for analysts. All applicants should have a Cobol background and have degree or equivalent qualifications. Re-location assistance. Ref. 863

RPG II/III A/Programmers

Glos, Wilts, Hants

£ negotiable

Manufacturing and commercial services organisations with IBM System 38 installations have vacancies for analyst programmers and programmers with RPG experience. Good salaries and re-location assistance in all cases. Ref. 787

IBM Systems Programmers

N Bucks

£9-16K+

Computer services organisation and manufacturing companies require several systems programmers at junior and senior level with experience of MVS/TSO and/or DOS VSE plus CICS. Knowledge of at least one major database software system is desirable. Good benefits. Re-location assistance. Ref. 884

Senior Real Time Specialists

Hants

£13.5-15K

Major company developing advanced real time military communications systems need senior real time specialists/project leaders. GEC 4000 and Coral experience is particularly needed. Knowledge of DEC VAX, Intel plus low and high level languages is relevant. Applicants aged c.35 years must have good degree qualifications. Excellent re-location package. Ref. 746

Microprocessor A/Programmers

S Glos

£7-10K

Small subsidiary of international group building advanced integrated microprocessor systems requires two analyst programmers to specify and program new sub-systems on Intel micros. A minimum one year's experience of 8085 or Z80 Assembler is essential and PLM or Basic desirable. Good prospects in expanding company. Re-location assistance. Ref. 877

Real Time Engineers

West, South, Wales

£10-£15K+

Major companies developing real time applications in telecommunications, process control, telemetry, industrial automation and military systems require experienced team members and project leaders. Computer Science/Engineering degrees essential, plus assembler and/or high level real time language experience. Excellent benefits. Re-location assistance. Ref. 614

Electronic Engineers

Wilts

£7-13K

Expanding company manufacturing advanced communications and business systems equipment requires several engineers at junior and managerial levels. Openings exist in testing, QA, reliability assessment, VLSI methodology and electronic design. Applicants aged 25-40 years must have appropriate technical qualifications. Re-location assistance. Ref. 598

UCL is expanding...

We have your business in mind

Universal Computers Limited - sole UK distributor of ULTIMATE computers (all of which use the famous PICK Operating System) is growing... fast. So it needs more sales and support staff to meet the increased demand for existing and new products, including a powerful new super micro (also running PICK) competing with many mini systems.

UCL turnover will exceed £4 million this year - a 40% expansion over 1982. Nevertheless UCL retains the small company atmosphere, so much appreciated by so many computer professionals, and offers real career development.

UCL requires NOW

- ★ Senior Sales Managers - earnings c£30,000
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- ★ Technical Support Engineers - up to £12,000
- ★ Applications Support People - up to £10,000

for its Head Office and new West London premises.

Company Cars will be provided, and the UCL package includes both Pension and Private Health Schemes.

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THE ROGER PARKER ORGANISATION**HI TECHNOLOGY APPOINTMENTS**

Our clients require professionally qualified individuals, educated to degree standard as a minimum, to work on high tech systems. The applications include: Defence (Army, Navy and RAF), communications, electronics, real time software design and radar. You will need one or more of the following: INTEL, VAX, MDS, M700, GEC ATLAS hardware using CORAL, ADA, PDL, FORTRAN, SLAM, PASCAL, PAL 8 languages. Other software includes: MAG, FACE, MAS-COT, AMETS and SLATE. Based Home Counties £15,000.

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EDP AUDITOR - Degree, qualified ACA, International Bank, £15,000+car+benefits.

ANAL/PROG - IBM SYST 38, RPG2/RPG3, European Bank, £13,000+benefits.

ANAL/PROG - Mini/Micro networks, PASCAL essential, producing banking packages, American Bank, £15,000+benefits.

PROGS - IBM SYST 38, RPG3, FX, M/MARKETS, BANKING, £10,000+benefits.

CONSULTANT - Develop/Market banking systems, £18,000+, plus car.

ANAL/PROGS - TANDEM, COBOL, BANKING SYSTEMS DEVELOPMENT, £15,000+benefits.

SEN PROGS - IBM 4300, VSE, COBOL, BANKING, £12,000+benefits

CONTRACTS

ANAL/PROG - IBM 303X, MVS, COBOL, BANKING

PROGS - IBM 4300, MVS, PL/1, BANKING

SYST/PROG - IBM 303X, MVS, BAL, BANKING

ANAL/PROG HP3000, MPE, COBOL, FIN/INSUR

ANAL/PROG U1100, EXEC 8, COBOL CONVERSION

ANAL/PROG D.G. AOS, RTOS, COBOL, TRANSPORT

ANAL/PROG TANDEM, GUARDIAN, COBOL, BANKING

ANAL/PROG IBM SYST 38, RPG3, BANKING

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CLIVE CHATTIN, EDP MANAGER, THE ROGER PARKER ORGANISATION

4 LONDON WALL BUILDINGS, GLOMFIELD STREET, LONDON EC2M 5NT
01-588 8161

PROGRAMMERS C.£10K Central London

The Fraser Williams Group is one of the country's foremost Computer Services organisations providing extensive project oriented DP services to commerce and industry.

To maintain the growth of the Fraser Williams London Company, we require career minded programmers, capable of working with minimum supervision and who would enjoy the challenge and variety of work which we can offer.

The essential qualities are:

- ★ 18 months + experience in one of the following: RPG II, preferably IBM S.34 or COBOL, with significant period on VAX.
- ★ A good academic background.

We are also interested in talking to people with experience of other commercial languages in a minicomputer environment.

In return we offer:

- ★ Training and the opportunity to work on a range of minicomputer hardware (DG, WANG, DEC, HP etc).
- ★ Genuine career advancement for the ambitious.
- ★ Wide commercial experience with a variety of clients.

For further information write or telephone
Bernard Taylor on 01-830 4041 during office hours
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Recruitment & Training

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NEW MIDDLESEX-BASED COMPUTER CENTRE**IBM 3083 - MVS/JES2, TSO/SPF, CICS and IDMS**

Our client is a major international organisation operating in the Financial Information Services sector of the market on a worldwide basis, and is currently setting up a new centralised European computer centre. Decisions have been taken to develop a wide range of financial services for UK and European customers which involves the design and implementation of large DATABASE systems using IDMS and CICS as a TP monitor.

Immediate requirements are to recruit a number of key D.P. Professionals which will provide them with the scope and opportunity to make a significant contribution to the development of new major batch and online/realtime projects. Excellent career progression will be afforded to those D.P. Professionals who can demonstrate their skills and contribute towards these ambitious development plans.

PROJECT LEADERS

Applicants must be able to demonstrate a sound technical track record of design and implementation of large-scale batch and online database applications, with experience of IDMS or other database experience. A working knowledge of command level CICS is essential for one of the positions preferably gained in an OS/MVS/JES database environment. A knowledge of BAL would be an advantage, but not essential. Project Leaders are responsible for functioning systems and associated documentation.

c.£15,000+

DATABASE ANALYST

This position will suit someone with a sound knowledge of IDMS (IBM or ICL), together with a working knowledge of COBOL. The successful applicant, who will be responsible to the Database Administrator, must be able to communicate effectively at Project Manager level, and make database design decisions. Additional functions would eventually include responsibilities for staff at junior level.

c.£14,000+

ANALYST/PROGRAMMERS

Applicants must have sound experience of IBM COBOL, together with a working knowledge of JCL preferably gained in a large-scale online database environment using OS/MVS. Exposure to analysis at design and specification level is essential. A knowledge of BAL would be an advantage, but not essential. Training in CICS will be given where required.

to £13,500+

PROGRAMMERS

A minimum of 2-3 years IBM COBOL and/or BAL is needed, together with a working knowledge of JCL preferably gained in an OS/MVS environment. Training in CICS will be given where required.

to £12,500+

OPERATIONS MANAGER

This position will suit someone with extensive DP expertise, together with a proven technical and managerial track record. The successful applicant will take a leading role in the pre-installation and running of this new Computer Centre.

to £20,000+car

If you are attracted to the challenge of these ambitious development plans, which provide the scope and opportunity for excellent career progression and generous benefits package, call IAN C. BUICK, MBOS, Managing Director.

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Tel: 01-834 0061 (24-hours)

Or call evenings and weekends

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DALROTH**New WANG VS100 Installation**

Central London Salary £11,000-£14,000

Basic + Benefits

Join the London Headquarter operations of a Company offering on-line accounting, contract and management services to the TV, film and entertainments industry.

This opportunity offers the chance to work with the originator of the software whilst he is in the UK tailoring, enhancing and developing it further for the European and UK market, and at the same time training you for a management role.

This system is based on WANG VS100 hardware and developed in COBOL; WANG experience would be ideal, although any good mini COBOL experience, ideally financially based, would be considered.

For further information, please contact Jenny Dalrymple-Hay or Peter Henrick on 01-493 2947, from 8 a.m. to 5 p.m. Monday to Friday or weekends Jenny Dalrymple-Hay on Beaconsfield (04946) 4579 or Peter Henrick on 01-390 1640 quoting Ref: 5018.

DALROTH & PARTNERS LTD. 4 HALF MOON STREET, LONDON W1. 01-493 2947

Programmers CAD/CAM

Cambridge

to £12,500

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We have been retained by one of the industry's most exciting and fast growing CAD/CAM companies to recruit for them a number of programmers to develop a sophisticated range of software products.

The company is committed to a continual programme of research and development in the area of CAD/CAM, particularly 3D Modelling Techniques, Numerically Controlled Machine Tools, sophisticated Database techniques and the broadening of applications from Mechanical and Electrical Engineering into other areas of industry.

They have, in-house, large Prime and Vax mini-computers dedicated to this development work and these are networked to a number of other machines within the organisation. A wide variety of Graphics Display Equipment is installed for the development of Graphics Software.

Applicants will be graduates and have a good working knowledge of Fortran preferably gained on a VAX machine. Experience of Unix and 'C' would be an added advantage.

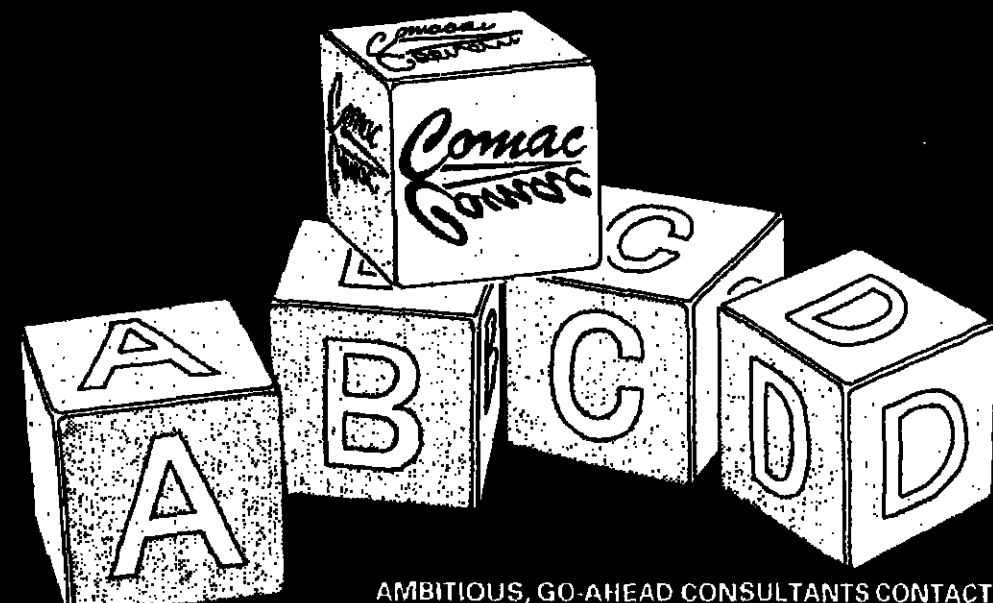
This is an unique opportunity to join a company whose success to date outstrips any of its nearest rivals.

Please contact David Hendry

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PUBLIC SECTOR

An East Anglian Challenge

COBOL Programmer

Salary Scale £7,191-£7,896

Applications are invited for the above post from candidates who possess a minimum of two years' commercial COBOL experience on an IBM 4300, working under DOS/VSE. A knowledge of CICS would be an advantage. The challenging post is located within a newly created section and offers ample scope for further career development.

West Norfolk offers you the 'Good Life' - 800 square miles of outstanding natural beauty containing a resident population of 120,000. Centred on King's Lynn, an expanding town, thriving port and agricultural centre, the area offers excellent facilities for a variety of sporting and cultural pursuits. Housing is reasonably priced and there are excellent schools and modern shopping precincts.

Temporary housing at convenient locations is likely to be available together with relocation expenses.

Application forms and job descriptions are available from the Personnel Section, Chief Executive Officer's Department, King's Court, Chapel Street, King's Lynn, Norfolk PE30 1EX. Telephone King's Lynn 61241, Ext 285.

Closing Date: 21 October, 1983



BOROUGH COUNCIL OF
KING'S LYNN &
WEST NORFOLK

WESTMINSTER HOSPITAL MEDICAL COMPUTER CENTRE

SENIOR SCIENTIST-PROGRAMMER

We have an IBM Series/1 and several DEC PDP-11 computers used for online acquisition of clinical data, laboratory automation, medical research and statistical analysis. The main programming language used is Fortran.

Applicants (male or female) should have a good honours degree in Science, Mathematics or Engineering and four years of relevant postgraduate experience.

Salary scale is on the range of Senior Scientific Officer, £10,007-£12,046 inclusive of London weighting, depending on qualifications and experience.

Application forms from: Personnel Department, Westminster Hospital, Dean Ryle Street, Horseferry Road, London SW1P 2AP. Tel: 01-828 8811 ext 201. If you wish to send a letter as well, supporting your application, please do so.

Further details about the post from Dr T. D. Preston, on 01-828 8811 ext 203.

university college of swansea

Assistant Communications Engineer

The college has recently established a Communications Unit in the Computer Centre, responsible for the maintenance and development of telecommunications facilities, particularly in relation to computing word processing and administration.

The College which already has an extensive data transmission network and is shortly installing a Plessey IXX Digital Telephone Exchange, now wishes to appoint an Assistant Communications Engineer who will join the Communications Unit and take over responsibility for the technical aspects of speech communications and who will also contribute to the Unit's programme of development.

Applicants, who should be graduates or have appropriate technical qualifications, should have experience of either maintenance, development or design of telecommunications systems or computer hardware or software, particularly in relation to communications.

Starting salary will be in the range £6,310-£9,275, according to level of experience.

Further particulars and application forms may be obtained from the Personnel Office, University College of Swansea, Singleton Park, Swansea SA2 8PP to which office they should be returned by Friday, 21st October, 1983.

(5951)

QUEEN MARY COLLEGE University of London Computer Science and Statistics Department

SELF-MOTIVATED PROGRAMMER

required to provide programming support and assist running and development of the teaching systems programming, program development and tutoring of students. The Department offers an informal and stimulating working environment with active research in IKBS, IT, Distributed Systems, Interactive Systems and Graphics. Applicants should be graduates, preferably with UNIX experience. The Department runs UNIX on PDP 11 and VAX 11/780.

Initial salary in range £8,310-£9,275 p.a. plus £1,185 London Allowance.

Please apply by letter indicating salary and names of two referees to the Secretary, Queen Mary College, Mile End Road, London E1 4NS.

Initial salary in range £8,310-£9,275 p.a. plus £1,185 London Allowance.

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Please apply by letter indicating salary and names of two referees to the Secretary, Queen Mary College, Mile End Road, London E1 4NS.

BOX NUMBERS

Box number replies should be addressed to:

Box Number

c/o Computer Weekly
Quadrant House, The Quadrant,
Barton, Surrey GU2 5AS

PUBLIC SECTOR APPOINTMENTS

COMPUTER DEVELOPMENT STAFF

Barnet is an Outer London Borough situated on the London/Hertfordshire borders with easy access by road, rail and tube.

To help satisfy the increased demand for computer services currently based upon a dual ICL 2980 VME configuration with an extensive terminal and micro network, we require additional staff who will play major roles in developing new systems for a wide range of local services.

SOFTWARE AND COMMUNICATIONS OFFICER (249)

to £11,500, with responsibility for the communications network design, implementation and performance monitoring.

Applicants should have a detailed knowledge of network design, IPA and TPMS, together with experience of micro/mainframe interfacing.

PROGRAMMER/ANALYST (432)

to £11,500, with technical skills to develop systems from initial investigation to successful implementation using VME and micro facilities.

PROGRAMMER/ANALYSTS (257/433)

to £9,300. Applicants should have at least one year's solid VME COBOL experience and the ability to develop their analysis skills with the aid of formal training.

Separation allowance and removal expenses may be paid, and staff housing accommodation provided for a limited period in approved cases. Interest free loans are available for annual season tickets; generous holiday entitlement.

Application forms from Room 48, Borough Treasurer's Department, London Borough of Barnet, Town Hall, Hendon, London NW4 4BG, telephone number 01-202 8282, Ext 120 quote the appropriate reference number. Closing date 21st October 1983.

We welcome applications from registered disabled people



(5963)

OXFORD UNIVERSITY COMPUTING SERVICE SYSTEMS PROGRAMMER

The Service runs an ICL 2988 and three VAX 11/780 computers, and has an extensive communications network. Developments in the near future include the acquisition of an ICL CAFS system.

The Service requires a Systems Programmer, to work initially on the maintenance and development of the VME operating system. Previous experience of VME, though desirable, is not essential.

The appointment will be made within the Universities' Research Staff Scales 1B (£8,310-£9,875) or 1A (£7,190-£11,615) with initial placement according to age and experience. Promotion is possible to Scale II (up to £14,125 p.a.).

Further details and application forms may be obtained from the Director's Secretary, Oxford University Computing Service, 13 Banbury Road, Oxford OX2 6NN. Telephone (0865) 56721.

The closing date for applications is 24th October, 1983.

(5911)

CITY OF WESTMINSTER City Engineer's Department Programmer/ Analyst

£10,194-£10,794 p.a. inclusive

To assist with the management and operation of three DEC PDP11 systems used by the City Engineer's Department for a wide variety of technical and administrative functions. You will be expected to take responsibility for new projects and to assist and advise the whole range of staff on the use of hardware, software and communications facilities.

The department also uses a bureau with a VAX and graphics facilities and much future development work is expected in this area.

Applicants should have experience in at least two of these topics:

RT11 BASIC DEC Hardware TSX - Plus FORTRAN VMS PASCAL

and should possess a good honours degree (preferably in mathematics or computing) and some computing experience.

28 days annual holiday plus 1 day off every 4 weeks. Modern offices near Victoria Station with restaurant facilities. Interest free loan for annual season ticket.

To obtain application form please send postcard, telephone or call at the Personnel Management Division (Ref: ENG 30), PO Box 240, WESTMINSTER CITY COUNCIL, City Hall, Victoria Street SW1E 6QP, telephone 01-834 5968 (24 hour Answerphone service). Closing date: 13th October, 1983.

(5968)

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GWENT COLLEGE OF HIGHER EDUCATION Faculty of Information Science and Systems Technology

HEAD OF SCHOOL OF COMPUTING

Applications are invited from highly qualified, highly experienced people with the ability to lead a team currently teaching and developing high-level computing courses.

Salary: P.L. Grade £12,519-£15,774.

SENIOR LECTURER IN COMPUTING

Applicants should be graduates with a broad experience of computer science and able to offer a high-level of expertise in particular areas. Teaching experience at NHC/HND or degree level is desirable.

Salary: £7,215-£13,443

Further details and application forms can be obtained from, and should be returned within 10 days of the date of this advertisement to:

The College Secretary, Gwent College of Higher Education, College Crescent, Caerleon, Gwent NP6 1XJ. Tel: (0633) 421292.

(5909)

UNIVERSITY OF NOTTINGHAM Human-Computer Interaction Group Applications are invited for the post of

RESEARCH ASSISTANT

on an SSRC-supported project: Software Tools for Laboratory Computing in Psychology. The successful candidate will join a group that is using the language Module-2 to create a portable development and execution environment for real-time, multi-process laboratory control programs. Applicants should have a good first degree in Computer Science or a related discipline together with appropriate postgraduate experience. Relevant interests are wide-ranging and include:

System Implementation Languages, Real-time device programming, computer graphics, screen editors, software development tools and user interfaces.

The post is available for a period of 15 months from 1st October, 1983 or as soon as possible thereafter. Appointment will be made on a scale rising to £7,180 per annum.

Enquiries should be directed to: Dr Roger Henry, Human-Computer Interaction Group, Department of Psychology, University of Nottingham, Nottingham NG7 2RD. Applications are to be made as soon as possible by letter and should include curriculum vitae and names and addresses of two academic referees.

The post is available for a period of 15 months from 1st October, 1983 or as soon as possible thereafter. Appointment will be made on a scale rising to £7,180 per annum.

Enquiries should be directed to: Dr Roger Henry, Human-Computer Interaction Group, Department of Psychology, University of Nottingham, Nottingham NG7 2RD. Applications are to be made as soon as possible by letter and should include curriculum vitae and names and addresses of two academic referees.

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SOMERSET COUNTY COUNCIL

EDUCATION DEPARTMENT

INFORMATION TECHNOLOGY CENTRE
SOMERSET COLLEGE OF ARTS AND TECHNOLOGY
COLLINSON CENTRE, TAUNTON

MANAGER

Required as soon as possible for a new Information Technology Centre.

The Centre, which is sponsored by the Somerset College of Arts and Technology under the new Youth Training Scheme, is largely funded by the Manpower Services Commission with assistance from the Department of Industry. The aim of the ITEC is to provide skills training for 30 trainees in the general areas of computing, electronics and microprocessors, which are relevant to technical and business applications.

The salary for this full-time (37 hours per week) post will be £10,539 per annum.

The person appointed will be involved in the initial development of the Centre and responsible for its day-to-day running. He/she will also participate in the training and work of the trainees as an active instructor.

Applicants should have relevant and recent industrial experience in microprocessor/microcomputer applications with qualifications appropriate to the post and to the skills training activities.

PRIORITY WILL BE GIVEN TO UNEMPLOYED APPLICANTS
Previous applicants will be reconsidered automatically.

Application form and further details available from the Chief Education Officer, Staffing N.T. Section, County Hall, Taunton, Somerset (telephone address envelope please).
Closing date: 21st October, 1982.

(5945)

POLYTECHNIC OF THE SOUTH BANK

Borough Road, London SE1 0AA

MANAGER INFORMATION TECHNOLOGY CENTRE

Salary up to £14,000 p.a.
(Readvertisement)

The POLYTECHNIC OF THE SOUTH BANK in association with the BOROUGH OF WANDSWORTH is proposing to sponsor, subject to the formal approval of the MSC (under the YTS Scheme), an Information Technology Centre at Manor House, Clapham Common. The Centre will provide work experience and training for young people in microprocessor and computer applications.

We are seeking a person with appropriate management experience and with knowledge of relevant production and marketing techniques to manage the Centre. The initial appointment would be for a period of 15 months with the possibility of further extension.

Application forms and further particulars are available from the Polytechnic Staffing Office. Tel: 01-828 8989 ext. 2365.

Completed application forms to be returned to the Staffing Office no later than October 28th, 1983.

(5970)

Computer Operator

To work on our central computer, a UNIVAC 1100/82, where a two-shift system with no night work is in operation.

Starting salary will be approximately £8,280 inclusive of Shift and Night Allowance, with progression to approximately £7,750 within three years. Benefits include an active staff club, restaurant and bar.

Applicants must have at least 12 months' experience on a large mainframe.

For further information and application form contact Kevin Pike, Computer Services Division, County Hall, Penrhyn Road, Kingston-upon-Thames, Surrey. Tel. 01-546 1050, Ext. 3478.



SURREY
COUNTY COUNCIL

UNIVERSITY OF KENT AT CANTERBURY

RESEARCH FELLOW:

MICROSTRIP CIRCUIT

MODELLING

Applications are invited for a three-year Research Fellowship in the Electronics Laboratory. The successful applicant will be engaged on a project supported by the Science and Engineering Research Council and Plessey Research (Caswell) for the development of models for high frequency (20-100 GHz) microstrip circuits. The research programme will be carried out in collaboration with Plessey Research (Caswell) where most of the measurements will be carried out. Salary will be in the range £7,190-£9,530 on the Grade 1A scale. Applications with details of qualifications and experience and the names of two referees should be sent to the Senior Assistant Registrar, Faculty of Natural Sciences, Chemical Laboratory, The University, Canterbury, Kent CT2 7NH by 21 October, 1983, quoting reference A55/83.

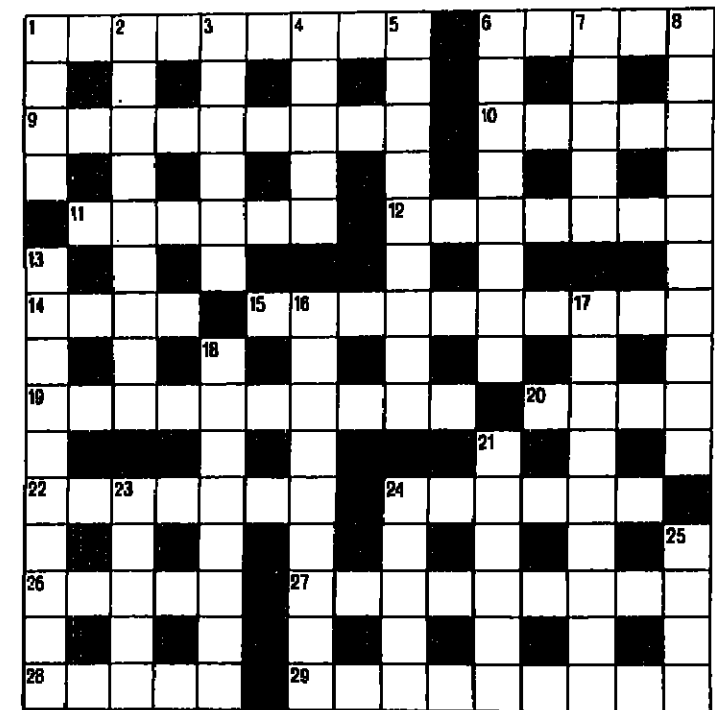
(5959)

CROSSWORD

Prize Crossword No 45

Compiled by Alec Robins

A prize of £10 will be awarded for the first correct entry opened. The second and third solutions opened will receive £5 each. Entries to Crossword Competition, Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS, by first post Friday, October 14. Please use a ballpoint to complete the crossword, and include a telephone number at which you can be reached during the daytime.



Name (Miss, Mrs, Ms, Mr)

Address

Telephone

I accept the rules and conditions of the Computer Weekly Crossword Competition.

Signed Date

- ACROSS**
- Portends damaging of rose-bed (9)
 - Conservative, noisy, a cause of gloom (5)
 - Give up manoeuvring cars, if near slippery surface (9)
 - Excessively backward in writing, proposes (5)
 - Quiet king has fit of shivering in foreign capital (6)
 - To be eternal, or sinking in final disease (4,3,4)
 - Train to defeat on board a fellow who's in turn? (6-4)
 - Checks exercise in intervals between work (10)
 - People always in the club stretch legs, perhaps (4,7)
 - Coaches - cleaners must catch one (6)
 - A bit of tension in the round's half-way stage (5)
 - Looking again at what's written about a university (9)
 - Tries to experience kiss - is thrown out! (5)
 - Disposition that gives a couple unity (9)
- DOWN**
- Swiftly dissipated (4)
 - These judges may have you taped (9)
 - Go across to urge a card tournament (6-5)
 - Pays money for missiles abroad (6,3)
 - Underwear in the morning is grabbed by old king (8)
 - Type of switch with negative reversed, no longer available (2-3)
 - Deranged, lost life when holding Southern Command (10)
 - Severely rebukes salesmen around the border also (10)
 - Part of hat a fellow grips in the street, beginning to run (4-5)
 - To make a brute of a male, I sin terribly (9)
 - Hiding in trees you need right garment (8)
 - Grand home - mate has one (6)
 - Can let room, surprisingly, for a gambling place (5,5)
 - Encourages making bombs (4)

RULES AND CONDITIONS

- Each competitor may submit no more than one entry.
- The competition is open to all readers of Computer Weekly with the exception of the staff of Business Press International Ltd, any printers employed by them or the near relatives of any such staff.
- The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.
- Winners will receive their prizes during the month following the competition.
- The decision of the editor on the interpretation of the rules and conditions and on all matters shall be final. No correspondence will be entered into.

ICL Cobol Systems and Programming Opportunities

TOTAL INFORMATION PROCESSING SYSTEMS LIMITED

An established and expanding software house invite you to join their hard-working team of analysts and programmers. Based in Waltham Cross, Herts, and Watlington, Essex, we are currently committed to development of software for ICL DRS 20 and ME 28 computers. The following opportunities are waiting for you:

ANALYST/PROGRAMMER Salary up to £13,000
Located at our System Centre in Watlington, Essex, you will play a key role in the development and maintenance of a wide range of systems. Minimum of three years' ICL COBOL is required, with knowledge of DRS, ME 28 or 2803 preferable.

PROGRAMMERS Salary up to £11,500
Positions at both Waltham Cross and Watlington offices. To assist in the development and support of systems. Minimum of three years' ICL COBOL required and knowledge of DRS, ME 28 or 2803 preferable.

If you are looking for a challenging position within a friendly working environment, and the opportunity to grow with an expanding company, then write or telephone with your details to: Mr. J. M. H. Jones, ICL, 2030 High Street, Waltham Cross EN8 7AY. Telephone: Waltham Cross (0927) 33208.

HEWLETT-PACKARD OPPORTUNITIES

- PROJECT LEADERS** 2 LOCATIONS c.£14,500
We currently have requirements for Project Leaders from clients in West and Central London. Both companies are heavily committed to DP and are involved in development of new systems. Applicants must have a sound DP background including good knowledge of HP2000 systems and software. As well as excellent starting salaries perks include usual large company benefits, some overseas travel and relocation assistance where necessary.
- ANALYST/PROGRAMMERS** HOME COUNTIES to £9,500
Software house based North of London are seeking Programmers and Analysts/Programmers to work on a variety of new developments on both HP260 and HP3000 systems. Applicants should have a minimum of 18 months' experience of either system using COBOL or BASIC. Excellent career prospects with the opportunity to work also on micros.
- PROGRAMMERS** LONDON c.£9,000
International financial concern requires Programmers with a minimum of 12 months' COBOL and a good academic background to join their teams supporting a number of overseas sites. Successful candidates can expect a good deal of travel and ongoing training. Perks include annual bonus, subsidised mortgage and other banking benefits.
- PROGRAMMERS** BERKSHIRE to £10,000
We are currently recruiting Programmers for a number of HP users based in Berkshire. Applicants should have a minimum of one year's COBOL, preferably gained in an HP environment, however training will be provided where necessary. A variety of perks are offered including all usual large company benefits.
- ANALYST/PROGRAMMER** LONDON c.£8,500
London-based software house specialising in HP260 and 3000 systems seeks an Analyst/Programmer to join their expanding team. Applicants should have a minimum of 18 months' experience of HP3000 COBOL or HP260 BASIC. Excellent perks include the possibility of a company car after qualifying period.
- JUNIOR PROGRAMMER** LONDON c.£8,000
Two Central London companies require Programmers with around 12 months' HP COBOL or BASIC experience. The sites concerned are involved in a variety of applications and can offer successful candidates further training and good career prospects.
- The above is a selection of vacancies at Hewlett-Packard installations. Whilst some sites insist on HP experience others will consider retraining applicants with good commercial COBOL or BASIC. Please call for details of these and others not listed.

Apex Computer Recruitment Ltd.

404 4821

London Office:
59 Groy's Inn Road,
London WC1X 8TL
Tel: 01 404 4821

Brussels Office:
Rue Gauthier de Comand,
24, Uccle 1180 Brussels
Tel: 010 322 377 4193

The International Air Transport Association in Geneva is looking for a

MANAGER DATA CENTRE

The main functions will include:

- administering a data centre consisting of a small technical staff with a PRIME 850 and MDS links to remote processors.
- identifying internal automation opportunities and overseeing all phases of project work either by direct involvement or by assignment to third parties. Automation opportunities will cover all aspects of automation from word processing to data processing.

The ideal candidate would have the following qualifications:

- At least 10 years' practical data processing experience in a business environment encompassing:

- application development from programmer level advancing through systems analysis to project management,
- central processing operations, distributed data processing involving network communications, intelligent terminals or stand alone micros,
- office automation involving selection of appropriate hardware and software, local area networks and incorporation of shared resources.

- Proven ability to organise and administer both projects and people.

Experience with PRIME is not essential.

The salary will be around Swiss Francs 75,000 tax free.

Relocation expenses will be paid.

Applications, including curriculum vitae, should be sent to:

Director, Personnel and Pension Administration
INTERNATIONAL AIR TRANSPORT ASSOCIATION
26 Chemin de Jolville
CH - 1216 Cointrin/Geneva
No later than 14 October, 1983.

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SALES EXECUTIVES CONSULT THE CAREER DEVELOPMENT SPECIALISTS

When you are dealing with the major factors in your life you can only afford the best, and few things are more important than the development of your career. Certainly, that is how the major computer manufacturers feel about their personnel selection and why such companies as CONTROL DATA, COMPUTER TECHNOLOGY, DATA GENERAL, HONEYWELL, PERKIN ELMER, REDIFUSION, SPERRY UNIVAC and many others continually use our organisation for the recruitment of experienced sales people.

We fully understand the needs of such companies as well as knowing about the many job opportunities that never appear in the press. These well respected names depend on our professional skills and confidentiality. Can you afford less?

Contact: Alan Williams

Alasdair Scott or Roger Dodd - ANY TIME!

LONDON & SOUTH MIDLANDS & NORTH

PROJECT CO-ORDINATOR

CITY

£18,000

+Banking Benefits

A major international bank requires a D.P. professional, aged between 30-40, with a solid IBM background. Experience of project management is essential with the ability to control and run more than one project at once. Applicants are expected to have substantial banking knowledge to include the installation of systems in more than one overseas branch.

ANALYSTS & PROGRAMMERS

SURREY

to £13,000

Internationally renowned manufacturing company is seeking Analysts and Programmers for large ICL VME development projects. VME/IDMS/TPMS exposure is particularly relevant. Analysts should have Manufacturing or Accounting systems backgrounds. Programmers will have two or more years' ICL Cobol and there is an urgent need for an experienced VME Systems Programmer.

PROJECT LEADERS

CITY

Neg £14,000

Our client, a major Software House, requires two Project Leaders to manage teams servicing their international client base. Ideally applicants will have financial, preferably Banking systems backgrounds and already have some supervisory experience. The positions attract an excellent Benefits package including good Bonus schemes and the early possibility of a company car.

PROGRAMMERS

ESSEX

£8 to £11,000

Two clients, both rapidly expanding ICL/VME sites, seek further Programmers at various levels to augment their development teams. A minimum requirement of one year's ICL Cobol is necessary with VME experience being especially advantageous. Early promotion to Team Leader or move to Analysis is available for those at more senior levels.

PROGRAMMER/ANALYST

C. LONDON

£10,500

A Programmer with at least two-and-a-half years' Honeywell Cobol is required for a small London site. All the development work is done with online techniques but they are prepared to train in this area (as well as analysis) so applications are welcomed from Programmers in a batch environment who wish to progress into online/database systems.

PROGRAMMER

LONDON

£7,000

London-based site require a Programmer with one year's commercial RPGII. The hardware is WANG but any hardware will be considered. Applicants should have the standard accounting knowledge (General, Purchase and Sales Ledger) and any manufacturing systems would be of special interest. This site will offer rapid progression into analysis.

Apex Computer Recruitment Ltd.

404 4821

London Office:
59 Groy's Inn Road,
London WC1X 8TL
Tel: 01 404 4821

Brussels Office:
Rue Gauthier de Comand,
24, Uccle 1180 Brussels
Tel: 010 322 377 4193

URGENT CONTRACT

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Call Loring at KPG on 01-948 5922 or Walton on Thames 245552 Evenings



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Immediate start
Call Lynne at KPG on 01-948 5922 or 01-543 4140 Evenings

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PERMANENT

IBM SYSTEMS PROGRAMMERS

VM, DOS/VSE, MVS £10,000-£12,500

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Call David Mason Johns at KPG or 01-747 0969 (Evenings)



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Richmond, Surrey TW9 2RA

SALES BIT

Quality of Management - 67

How to close a sale at the first call

ONE of the problems of writing a specialist column is that everyone expects you to be a flawless exponent of the art. Whether your subject be nuclear physics, domestic science or, as in my case, selling, it is assumed that any bearing in mind that the right opportunity could come along at any unpredictable moment.

The fact is, it is much easier to pontificate on an action than to carry it out efficiently. No matter how much you study a subject you never get it right all the time - and if you don't practise it the value of such knowledge is severely diluted.

You may, for instance, know all the basic closing techniques, but if it's a long time since you were out in the field, it could be that when the time comes to apply them within the context of your current product in the present marketplace, your efforts are ineffective.

This time of year is usually a busy time for the recruitment of salespeople, and as several major computer companies have asked us to take a look at their requirements we have been involved in a lot of client visits. So I have been asked to lend a hand.

A few days ago we visited a minicomputer manufacturer and I took the opportunity of getting back into harness by front-ending the call. We have a standard presentation which describes our company, services, benefits etc, and as I designed it myself, albeit a few years ago, I was able to put it over with reasonable fluency.

Within seconds I realised my first mistake. I had assumed that my colleague who had brought the visuals along had checked them out. Well, he hadn't - or if he had, he had not done the job thoroughly for, with great aplomb, I delivered the very first visual upside down. Not an auspicious beginning!

Not my colleague's fault, but mine, for I did not insist on double-checking the material. And I was sufficiently complacent to believe it was not necessary for me to practise beforehand something with which I was already fluent.

As it happened, the hiccup in the presentation was a frustration rather than a problem. The real problem did not occur to me until it was too late to do very much about it.

It is easy to fall into the trap of believing that a sales presentation can be the total purpose of a client visit, as opposed to a major element within a selling call.

Formal presentations can often require so much pre-preparation and demand so much concentration on the part of the presenter, ie the salesman, that it is easy to overlook the need to create an overall structure for the call which above all else includes a final or trial close. Every sales call must have a plan, and a presentation is a sales call.

It is not enough to visit a client merely to tell him who you are and what you do, or even to discover what the potential buyer's requirements are. The minimum objective of any call is to come away with commitment in terms of subsequent action to be taken; but even that is a poor alternative to closing the sale.

Now that may appear rather obvious. What is not so obvious, because many salespeople fail even to consider the question, is whether the business can possibly be closed within each call that is made.

"Close early and often" it says in all the selling books. What that means is be prepared to close the deal at any time in any call, even if

your typical selling-cycle is measured in years. The way to do that is to create a structured plan of action for every sales call. That creates a natural point at which the selling close will be applied, bearing in mind that the right opportunity could come along at any unpredictable moment.

My loose strategy was to tell them about us, get them to tell us about them, then ask for the order. What happened in reality was that the presentation created a lot of interest and generated a lot of questions. This was followed by a thorough description of the client's products, markets and recruitment needs which was extremely interesting and attractive.

This was immediately followed with the news that the senior managers involved were already 15 minutes overdue for an important meeting and they had to go despite their extreme interest in everything we had to say. This was in turn followed by one of the classic confirmations of selling failure: "Let us have a quotation".

We hadn't lost the business in this particular case - far from it; but with intelligent planning we could have closed the business there and then. All the facts were known, so what was the point of going away and saying the same thing in writing?

Now there was time for competition to get into the act, time for reconsideration, time for political intervention, time for receiving an offer they couldn't possibly refuse. In other words the odds of getting the business from this excellent company had dropped from what could be considered a 95% chance to perhaps 60%, simply because of inadequate selling strategy.

What did I do wrong? For a start I didn't agree on the amount of time the client had available and planned the call accordingly. I didn't establish (until it was too late to be of immediate value) whether the person with the authority to make a decision was included among the client's representatives. Neither did I establish that a budget was already approved for the expenditure involved.

As we had run out of time, despite the fact that I had my company's authority to negotiate terms, we could not establish and therefore agree the costs involved.

And how can one close a sale when the terms of business have not been discussed? All of this could have been avoided if I had been selling to a predetermined pattern with positive objectives determined within an agreed timescale.

What is more, I now have to provide a quotation, a proposal, that is completely unnecessary.

Just think of it from the buyer's point of view. If you are too nice to say no, what easier way is there of getting rid of the salesman than saying: "That's very interesting. Why don't you send me a proposal?"

For my own part I hope I have learned the lesson of my mistake. I also hope we still have a chance of getting the business!

Alan Williams

PUZZLE ANSWER

THE most efficient way to construct a rectangular open-topped tank is to make it with a square base, and twice as wide as it is deep. This 2:2:1 ratio of the three dimensions keeps the amount of material needed to a minimum.